

Home Computing WEEKLY

NEW

12
Ages Specials Published

May 5-9, 1985

No. 9

1985

Mrs W: 'I WON'T SEE SEX GAMES'

Age 17 girls' computer game Mrs. Whitlock has been named again as candidate for new "adult" computer games featuring explicit lesbianism.

The new idea would be to expand John Ford's role Mrs. Whitlock should see the game before considering them.

But Mrs. Whitlock, pres-

ident of the National Videogame Association, has been told Home Computing Weekly "the more the better."

One employee who says she has not asked how she could make money selling the game, but she said that if she did, people would say "She's just a girl who's just a girl."

The association has papers — including letters and notes — that submitted appear to be the association.

In 1981, the first, the association was not wanted to be judged as gay.

But now, it is for a new sexual theme which is to be added to the game. The game was launched.

"It's not for us to go and make the world and give our personal views. What I thought would be important. What is our purpose is whether the game is a computer game. And I don't think that the game and the game will be well known of their purpose."

Mr. Ford's company, Electronic Communications, 10 Charles High Street, has already had a deal from the game. However, a computer game by Mrs. Whitlock and Home Computing Association are continuing.

The game is designed to be a computer game. However, it is not for the game. The game is designed to be a computer game. The game is designed to be a computer game.

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INSIDE

Programs to type in for:

BBC, VIC-20, Oric-1, Spectrum

Pages of News

Software reviews for:
VIC-20, Spectrum ZX81, Video Genie, BBC, TI-99/4A, Commodore 64

Sinclair in talks with new challenger

Hours after announcing his decision to resign, Mr. Sinclair has been told that he will be replaced by a new challenger.

The new challenger is a man who is a member of the Sinclair family. He is a man who is a member of the Sinclair family. He is a man who is a member of the Sinclair family.

And now, the new challenger is a man who is a member of the Sinclair family. He is a man who is a member of the Sinclair family. He is a man who is a member of the Sinclair family.

Mr. Sinclair has been told that he will be replaced by a new challenger.

Mr. Sinclair has been told that he will be replaced by a new challenger. He is a man who is a member of the Sinclair family. He is a man who is a member of the Sinclair family.

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Mr. Sinclair has been told that he will be replaced by a new challenger. He is a man who is a member of the Sinclair family. He is a man who is a member of the Sinclair family.

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Continued from front page

Agos 2600 and on April 400 and 800 computers fitted with adaptor systems. Available Pickard says by phone (a) sell them on cassette for other home computers within six months.

Each cartridge costs £18.95 for two games and the first programme is distributed by the end of the month. They have names like *Carbowar Blues*, *Philly Flasher*, *Burning Desire* and *Knight on the Town*.

All feature natural men and women used in some cases the sum of the games is like couples to meet in explicit sex scenes.



Mrs Whitelane - refined tasteless Pinet. (Screen Editor)

Mr Pickard said the cartridges would have pockets on the boxes so children could not get to them.

Mrs Whitelane compared this to the idea of an X-rated cable TV channel which, if the plan had gone ahead, would have an explicit sex look.

She said: "It's just plain daft. If you have these things at the house there's no way you can stop children seeing them."

"The cinema is outside the home and children are not allowed to see some films. But anything that comes into the home has to be seen as it is on the child. No society should put the message of the adult before those of its children."

Her view is shared by the director of the National Society for the Prevention of Cruelty to Children, Dr Alan Cleeve.

Continued on column 4

Home Computing WEEKLY

| | |
|--|--------------------|
| News | 5, 5, 5, 10 |
| U.S. scene | 6 |
| £1,000 Competition | 7 |
| One Man's View | 10 |
| Oric-1 program | 11 |
| Lead your helicopter safely | |
| Letters | 15 |
| Software reviews | 17 |
| Utilities for VIC-20, Spectrum | |
| ZXB1 programming | 18 |
| Getting a quart into a pint pot | |
| VIC-20 programming | 21 |
| High resolution graphics, without an add-on | |
| Spectrum program | 25 |
| A game made for two | |
| BBC programming | 27 |
| Fast moving graphics | |
| Software reviews | 29 |
| Games without frontiers | |
| VIC-20 program | 31 |
| For the fun and sweet the golden in March blue | |
| Software reviews | 35 |
| Setting a course for VICtory | |
| Spectrum software reviews | 39 |
| Down to business | |
| Profile: Chamclean | 43 |

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Continued from column 1

He said: "The view of sex portrayed by such gloriously offending can break a child's mind for life."

Lawyers too. Argon are looking into the possibility of taking action against Silverfox — but they can only act if its trademark is being infringed.

Argon's UK boss Graham Clark said: "We obviously deplore the stuff. The fact that they say it's Argon compatible does not do us any good."

And Mike Whiting, software market analyst for the company, said: "We are waiting until they come on to the market."

"I'm waiting for word from our solicitors on how we stand legally. Unless our trademark is being infringed there's no action we can take."

"On the subject matter it would be unfair to comment until we have seen them. If they are breaking the law in other respects it's up to the police."

BASIC, look you

Try programming in *Wish BASIC* — and, aa, it's not a joke says the man who has just brought out *BASIC CHINAID*.

Daniel Larwood, proprietor of David Computer Software, said: "It's quite serious, but it's hardly a controversial proposition. We did it for fun, really."

The program, which costs £6, is loaded onto standard BASIC onto the Sharp M2-80A and M2-100 computers. It automatically translates the traditional BASIC words into their *Wish* equivalents.

Programs are interchangeable and can be loaded in other *Wish* or English, depending on the BASIC loaded, irrespective of the version used to write the program.

David Computer Software, 14 South Parade, Bournemouth, Dorset BH2 1JG.

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ME FOR \$250.



Richard Attenborough and Michael
Jackson are the only people awarded the
Oscar twice

After years of developing micro-computer that use BASIC, IBM also played a major role in creating the C# language. They abandoned it in favor of Java.

PCREB is just as easy to learn as BASIC. Yet it's a faster, more compact and more efficient language. And educational and professional programmers alike prefer it.

computer you can buy that is designed around

Using it, there's less fear of accidentally washing programming away through trial and error to start all over again (a common fault with BASIC). The Super Chat development error checking says that

The laparoscopic approach was designed to high-resolution graphics could flowing ports entrance a full visible concentration of 90% of 1000 pixels (12 month warranty).

The great deal for \$99.95. Plus a mini adapter, all the leads, needed to connect your Christie recorder and TV. A software catalogue (2) covers available goods to fit SII. The Jupiter Ace manual and a free demonstration cassette of *Telexmania*.

The Kaplan International is a complete introduction to personal computing and a single-to-future course in PCPTA. Hands-on exercises for confident computer use.

Play-*on* HRP and ORC memory representations are also available at many computerized pools (Figure 8 for a play-*on*-poker machine available from www.1000000.com).

©1996 you, owners of all licensed beer, cider, Richard and David want to design the Super Bowl around **WORTH**. And even better, we understand it will cost \$100 million to change the

[illegible]

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

Table 1

1000

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Admiralty suggested 32 and a 24-hour flyover from above as options, and because a test was a "no-brainer,"

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1. *Journal of the American Medical Association*, 2000; 284: 2689-2694.

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Software firms are asking for it

How can the heart bleed for the software games manufacturer?

Not only is he faced on all sides by increasing competition, but the unending profits are in danger of erosion by the pernicious practice of home copying.

The outrage of the software manufacturers who fear that libraries and "buy and try" shops encourage people to study their own copies, reminds me of the prostitute who tried "rape" when her client avoided payment of her services without paying, "or marriage condones the action, buy the man currently sitting for a...

Computer games cost anywhere from around £4.95 to more than £20. Mine runs at the lower end and that is a lot to pay for a game that may hold the buyer's interest for only a week or two, perhaps only a couple of days.

At their best, and most expensive, there are a few cleverly conceived, imaginative and complex games available — Star Masters and Eastern Front for the Atari are about worth their high price. Most of them, however, develop a single idea over and over again, and for variation, the same thing again, only faster.

In the middle range — mostly home games — one could be lucky and find, now, a good chess program, or be faced with a thoroughly difficult game like Tetris's Converter. And at the bottom end are uncountable, unrememberable games — the most on display of them is the advertising blurb used to sell them in the first place.

It is salutary to consider that a full-price £4.95 result is only £2.95 or thereabouts, and the marketing industry has not overlooked to cover before the manufacturing and distributing process even begins. In contrast, the software overheads are minimal: even the programmers usually work at home.

Thus is a good cash situation, and forecasts are being made overoptimistic.

Does anybody think that computer games are wildly overpriced? That the profits currently being made in this area are shockingly modest? But not at all, even even in the end benefit of one correction.

The software manufacturers are probably thinking of incorporating a payment or off-shoot device in their tapes to control the copies. But your computer freak wishes just such a challenge, and the solution will rapidly, his multi-tap tape to question, become public knowledge.

No, the most effective way of discouraging home copying is simply to make it uncommercial.

If the average program was to retail at, say, £1.50, who would bother copying it? The recorded cassette probably costs the manufacturer, in quantity, no more than about 25p per unit. The same program could be adapted for 16 or 32 different computers. Research could well be kept for a month while game.

The software people might not become instant millionaires, schoolboy programmers might not earn more than their fathers, but they could all make an honest living out of it.

Gordon Williams
Bookbinder
Southam, Hants.

a. This space is for you to send off about the main items, to present proposals or to list details. Send your views to: sending them to Paul Rogers, Options House Computing Society, 149 Charing Cross Road, London WC2R 3LE. Please include your occupation and your interest in computing.

Lighter to carry

Commodore's new DM-66 portable computer, based on the top-selling Commodore 64, will go on sale here in the autumn priced at £650-£995.

Weighing about 12 lbs, it is considerably lighter than most other portables.

The lowest priced version has a 16in black and white monitor and a half-height 5 1/4in floppy disc drive with a full keyboard, plus four function keys, built into the detachable lid.

The keyboard is slightly different from the 64 because of the narrower width of the new computer.

The top of the range model has two disc drives and a colour monitor with the same keyboard.

The new disc drives will also be available in separate units — the model 6600 with 1 megabyte of storage and the 6700 with 2 megabytes.

And there's more news about Commodore.

As introduction to BASIC, part 8 for the Commodore 64 has been launched at £14.95. It has three parts, each made up of 15 lessons, two exercises of programs and a flow chart manual. The VSC-30 version, parts 1 and 2, are Commodore's top-selling programs.



Stylish and sturdy — Commodore's new CDM cassette unit.

■ A re-styled version of the Commodore CDM cassette unit, compatible with all the company's computers, has been brought out at an unchanged recommended retail price of £45.95. There is no mechanical difference, but the new unit is sturdier.

■ Commodore UK has a new general manager, Howard Southworth. His predecessor, Bob Gordon, has been promoted to vice-president of Commodore Electronics in Hong Kong.

Commodore Business Machines (UK), 637 Ajax Avenue, Slough, Berks.



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Showtime for thousands

Ex-actor and Elton John was among the 9,000 visitors who flocked to the Manhattan Home Computer Show.

John, who played for Manhattan's United and Scotland, owns a Commodore 64 and was keen to use two computers, one for the winner and one for a school chosen by the winner.

More than 1,800 people took part and the winner was Stuart Baldwin, of 6 Bedford Avenue, Washington, Manchester M20 8LQ. The school he named was Our Lady's High School, Almonds Road, High Wycombe, Bucks HP12 9AP.

The competition — and the show's popular sponsor advice centre — was run by the organizers, ASP Exhibitions, part of Argus Special Publications, which publishes *Home Computing Weekly*.

These are the current answers:

A. Siskat Research order code number for the ZX Spectrum was 188 RAM 300.

B. Quoted number of bytes of RAM (in decimal) in the standard Atari 400: 16384.

C. The first Spectrum ZX computer was the ZX77: 80.

D. Number of numbers displayed by the Dragon 32 micro made: 32.

E. Number of songs displayed by the Celine Gene micro made: 24.

F. How many colors can be displayed by the One 1: 4.

G. Number of independently accessible games found on the Commodore 64: 4.

H. How many standard characters may be displayed on a standard VIC 20 screen display: 384.

Entrants were then asked to add up the numbers in the answers and give the total: 17,142.

The new Home Computer Show will be held on June 1 and 2 at the Metropole Hotel, at the National Exhibition Centre, Birmingham.

ASP Exhibitions, 145 Chancery Court Road, London WC2M 9EE: 01-437 1002.

Books for programmers

Publishers McGraw-Hill have introduced a new series of computer books, starting next month with *Z80/TS1800 Programming for Young Programmers*, by Linda Murray, at £4.99 plus £3.49 for an optional tape with three games and extended versions of the programs in the book.

Other books in the series will include the Spectrum and Dragon and, says the company, are designed to take micro users beyond simple programming.

McGraw-Hill Book Company (UK), Shoppenhangers Road, Maidenhead, Bucks SL6 5JN.

Maths by micro

LCL's Micro Maths, a two-cassette pack designed for 16-level revision, is now available for the BBC Micro, VIC20 and Spectrum at £24.99 as well as the ZX81 version for £19.99.

The company has also brought out a collection of 90 programs — an idea done — which is claimed to cover everything needed to get through Maths O level.

It costs £80 for the Apple and PET and is being converted for the BBC Micro.

LCL, 26 Arundale Avenue, Sarnet, Notts.

Royal fever hits Silicon Valley

You are all probably quite aware that America recently got a chance to get ready for the initial run of the Queen. What you may not know is that Her Majesty's first PDP tour of Mendocino Park in her recent visit. There is even a rumor that she had a hard time getting herself a wig from the cosmetics.

Anyway, the Queen was given a very personalized tour of PDP by none other than David Packard, one of the firm's two co-founders. Among other things, she was shown how a computer is assembled, from chips to boards, and even a personal to look at the computer and for some specific applications. In fact, a special board was created just so the Queen could look into the room where integrated circuit wafers were being tested.

Apparently, the staff at PDP got their own to be paid, writing up a note more computers to display graphics demonstrations of the British flag, the Royal flag, and of course the US flag and California's flag. If that were not enough, there was even an unusual display of display flying over the state, to provide that special British national flag, I am told.

To celebrate the visit, the Queen was given an HP-220 Model 25 microcomputer, worth about \$24,000. The gift was presented by Henry Kissinger upon behalf of the entire nation.

So what, you might ask, can the Royal Highness do with such a computer? The computer apparently was presented with sufficient applications software to enable her to consult the home in the world, throughout the proceedings, her own results, and their own.

I cannot keep the image from my mind as I was in this morning, and the Queen is saying to Prince Philip, "I'll be right to bed as soon as I get rid of one more bag in this program."

The question that I had, was: will we now be subjected to a series of "Royal" comments, depicting the Queen as a user of an HP computer? The answer, thank goodness, is no. A White House spokesman spoke directly to the case by stating that such an action would be completely inappropriate since the visit to PDP was set up by the White House, and was meant to result in a marketing device for PDP. Where, what a relief?

So what, you might ask, can the Royal Highness do with such a computer? The computer apparently was presented with sufficient applications software to enable her to consult the home in the world, keep track of their purchases, their own results, and their own.

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It had to happen. On the 15th of April, our Public Broadband System is a commercially important and basic to show the line of the 15-year BBC series on Microcomputers. Our US rep of Home Computers made the comment that the news did not show a picture of the Queen, who should it? They already know no more about computer viruses.

See you next week

Paul Lee
Folsom, California

Here's your chance to win a share of £1,000-worth of software as another line, prize-in-joint competition from Home Computing Weekly.

We have got together with Audiogenic, who market a fascinating range of software for the VIC-20, Spectrum, Commodore 64, Dragon and Alan.

All you have to do is study the word square and mark as many program titles as you can find from the 96 given.

There are five great prizes of software from Audiogenic's catalogue to be won, so don't forget to name your computer in the coupon.

Indicated in the prizes is Wordcraft 20, a word processor for the VIC-20 which costs £120. It comes in a plug-in cartridge which also adds 16K of RAM, available for other programs too.

You could win one of the following:

1st prize Wordcraft 20 word processor cartridge for the VIC-20, worth £120, plus £150-worth of software from the Audiogenic catalogue

2nd prize Wordcraft 20 and £50-worth of software

3rd prize Wordcraft 20

4th prize £50-worth of software

5th prize £25-worth of software

And you gain extra if you're not among the winners. Every entrant will receive a 10 per cent discount voucher — valid for three months — for any single software order from Audiogenic.

How to enter

Look at the list of software titles, all from Audiogenic, and mark clearly if those you can find in the matrix below. They may be given for words, backwards, up, down and diagonally. But all of the words in the list are in the word square.

Fill in the coupon, including the name of your computer, and send to both the month and the coupon. Coupons will only be accepted. You must write to large Audiogenic on the back of your envelope the number of titles you have found.

Entries which do not meet these conditions will not be considered.

Post your entry to Audiogenic Computer Ltd, Home Computing Weekly, 140 Charing Cross Road, London WC2H 0EE.

You have got until five past one on Friday May 3 to get your entry in to seal the solution and the names of the winners will be published in Home Computing Weekly.

This list of software titles contains all those hidden in the word square, and more.

Home Office
Banks
Units of Revenue
Treasury
PIA
Acute Risk
Belt
Bios
Security Rationale
Trusts/Arms
Commodity
Blackmail
Way back

Customs
Systems of Mass
Classification
Bioscience
Major Risk
Major Accidents
Fuels
Wastewater
Scrapyard
Virus
Military Risk
The Atom
Golf

£1,000 competition from audiogenic and Home Computing WEEKLY

The small print

The first five correct entries drawn at noon on Friday May 30 will win the prizes, or the entire money shared.

Entries which are not fully completed and envelopes without the number of titles found given on the back will not be considered.

Entries will not be accepted from employees of Audiogenic Publications, Audiogenic and Alabaster (Publishers & Sons). This restriction also applies to employees' families and agents of the companies.

The winners' names and the prizes won will appear in Home Computing Weekly. The editors' decisions in final and no correspondence will be entered into.

Entry Coupon

Name

Address

Call (0) 20 7611 1111 for details or send to **print code** (0) 20 7611 1111

Your computer:

Post to Audiogenic Competition, Home Computing Weekly, 140 Charing Cross Road, London WC2H 0EE. Closing date: five past Friday May 30

R E N A I S S A N C E M A N G O L D E R
T H E R E O F A K I N D A F F E R T B E
G H D S T H U N A L I E N M L I T Z E R Y
A U D I D G E N T F A R C D R D W T I C
T H E H T R O F E I T S A N D P G C I G H
S P D N T P R O D D R E T A S T E L E T
L O G E R O A T I N E D A R C O L R I N
Q T M I S S P L A C T I L I N G O D N S
M A L L E Y R E T R F O T S P A D R C E
S T A A R T B A C K I N G U N A L T E R
P O L E H D S M C K L O U D H U R S T S
M A S H O N M E E F P T Z Z Z O O A I D
S S A T A K N A T I O N E N D S W R P F
F G H I S D A B E T H S H O O T T B E R F
C A S T A W A Y O S C A B E E R U T Y O
R E A N F O K I R M E N S E S S O B Z L
S T O M R O F D R E M A N S D G H I Y D
S H U N M B E T U G H I B E T I T R E D
L A P A D A P A N A M H S A R T P O S T
C R O S S A N F G E B A K I L T R S E D



Electron revealed

This is what Acorn's BBC Electron computer will look like.

Our studio artist, drawing, checked with sources inside the company, shows a full typewriter-style keyboard in a casing measuring 12in wide, 12in high and, at 6 1/2in, less deep than its near, the BBC micro.

Single key entry for BBC BASIC commands — like CHAIN, MODE, RETURN, COLOUR and LIST — is provided

by 28 keys, with the caps lock key also acting as a function key. This also controls 16 keys on the top row which act as program-modifiable keys.

The coming to the same release as the BBC computer, with colour lighting and green screen on the brown strip above the keys.

Acorn's design team is providing a "cut down" version of its BBC computer with a range of add-ons for features like additional interfaces, the slide for vertical processors and Pseudo Memory, a 32K of RAM as

of ROM, is the same as the BBC model B and it has the same ASIC processor.

In processing speed will be slower, there is just one sound channel and there is no Mode 7 screen display.

Unlike the BBC models, the Electron will be supplied with a separate power transformer. Output will be provided for colour TV, composite video and PAL or RGB monitors and cassette tapes is at 1,200 baud.

Now the next step is ensure that the range of peripherals is available as the first of the launch of the Singapore-based machine.

Full-scale production is expected to start in July and there is a good chance that the Electron will be officially launched at the Acorn User Exhibition, starting on August 23.

Acorn Computers, Fulbrook Road, Cherry Hinton, Cambs CB3 9EN

Cycling into software

Crising: pals Tom Myles and Gary Marshall thought a lot of computer software was "rain-bird" — so they decided to set up their own company.

And sure, nine weeks after the formation of Soft Joe's, they have four games on sale, all selling 10,000, for the Dragon and BBC micros.

They first met when Gary moved into the same street and found they shared a sport — cycle racing.

Both went computer hobbyists, Gary had a Commodore 64 and Tom's main was an Atom 400.

Tom, 24, said: "We had seen a lot of rubbish on the market and we knew we could do better."

Tom, whose job was dealing with inquiry clients with an insurance company, and Gary, 24, a former amateur with a law firm and a newspaper firm, raised the money to start Soft Joe's thanks to their branch of Lloyds Bank.

And they say they have big plans to promote their software, including a road show.

Soft Joe's has just one employee at present — Tom's sister-in-law Julia Playford, 17, who had been one of a job for six months and Tom and Gary took her on as a typist.

Soft Joe's, Small Business Centre, Clapham Road, Brixton, London SW9 6DL

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ASA Ltd, One Nine, Langley Park, London Col. Ind.

Top Twenty programs for the Spectrum

| | | |
|----|--------------------|----------------------|
| 1 | The Hobbit | Melbourne House (—) |
| 2 | Flight Simulator | Flight (30) |
| 3 | Penetration | Melbourne House (1) |
| 4 | VU 30 | Piran (12) |
| 5 | Horizon Gate Stone | Piran/Mel House (8) |
| 6 | VU File | Piran (—) |
| 7 | Phaser of Death | Artic (13) |
| 8 | Hungry Harrier | Piran/Mel House (4) |
| 9 | Nightflight | Hawson (—) |
| 10 | Archie | Imagine (10) |
| 11 | Timothyween Tower | Richard Shepherd (2) |
| 12 | Chess | Piran (16) |
| 13 | Schurlock | Imagine (—) |
| 14 | Planetoids | Piran (5) |
| 15 | 30 Tons | MS/Thomas (17) |
| 16 | Grand Attack | Schurlock (14) |
| 17 | VU Calc | Piran (18) |
| 18 | Quadrant | Artic (8) |
| 19 | Football Manager | Addictive Games (—) |
| 20 | Escape | New Generation (—) |

Compiled by W. H. Smith. Figures in brackets are last week's positions.

Comment from front page

It has the same Z80A processor in the Spectrum along with rubber like keys. It measures a whopping 101cm by 27cm by 3.1cm and has 1K of ROM and 1K of video RAM.

But there is now 16K of RAM available to the user — and plug-in memory, in 16K and 32K modules, are dispatched from Japan in July. The faster M5770, with 48K of RAM, is due here in September.

The Spectrum offers 16K of RAM for £69.95 and the 48K model is £129.95.

However, Mr Shima and the M57 was again in use, particularly because of the PALC, a version of Sord's BASIC language which was simpler to use than BASIC.



Chard Sord, Mr. Shima.

He said: "I think the Spectrum is very nice, but I don't think it has much expandability. And BASIC is too difficult to learn and too difficult to use. The market is wide enough for all of us."

"I would like to meet Mr Sinclair to see if we can find some co-operation."

Mr Shima said the M57 would also succeed because of its easy-to-use graphics and because the range of software was so good.

It comes with what Sord calls BASIC 1 built in and BASIC C and BASIC F will be available on cartridges, both at £29.95 each. PALC will also be on a cartridge for the same price.

There are three cartridge games, at £20.15 each, and a range of classics, costing £7.65, available from Sord, with more to follow. Aquarius costs £21.25 a year.

Mr Shima also revealed that Sord was bringing another small computer to the UK in August, the headfield M57 with micro-cassette recorder and liquid



Takashi Shima — founder and president of Sord.

crystal display of eight lines of 40 characters.

Sord's UK sales manager Doug Sadle and Computer Games had placed an advance order for 50,000 M57s and added "I'm looking to sell 100,000 this year, starting next month."

Asked about the competition and about the 4K of RAM, he said: "We seem to be taking into a unique niche. The market research seems to show we will reach 20 per cent in the first year."

"You could be right — it could be too expensive. But my research shows we are in a different league. You can agree that about any computer equipment."

Sord, which also markets a range of office computers, has introduced £135,000 in the Dugby Machine shop show in London and the different exhibition. Shirley Dakota was the reception. He was a Sord computer in his own.

Mr Shima, 36, who founded Sord 12 years ago, saw Mr Sinclair later in the day with his Japanese, Yamada, general manager of Sord's British branch.

Mr Sinclair was close with an aide, Anna Sinclair (no relation). Mr Driver explained that both men were interested in using computers in business — Mr Sinclair with his electric car project and Mr Shima with computer-controlled submarines and helicopters.

Sord, General Motors, St Albans Street, London SP17 4SG.



Sord's M57 basic computer — now here from Japan.

Spectrum, ZX81 prices slashed

Prices for the Spectrum and ZX81 have been slashed by W.H. Smith — just a week before another Sinclair Kenneth Institute's own Spectrum price cuts, plus new software.

But a Sinclair spokesman stressed that W.H. Smith, by far its biggest UK customer, did not get special treatment.

New to the 16K Spectrum costs just £99.95, a saving of £21.65, and the 48K model is reduced to £145.95 to £129.95. Sinclair's new releases, starting today, are: *Warrior*.

And the ZX81 from W.H. Smith is now £39.95, down £10.

Several British manufacturers could offer the computer problem, said its company's price early in time for the Smith holiday.

And he announced that the 16K computer Aquarius would be increased in size this year and — as revealed in Home Computing Weekly — computer "shops will be shops" would open in the next few months.

A Sinclair spokesman said economies of volume production had enabled the company to reduce prices. It had no plans to cut the cost of the ZX81, but given a new price in August last year and still selling at £5,000 a month.

To coincide with its new prices, Sinclair unveiled a new range of software for the Spectrum and ZX81 which will be on sale in May, bearing the Sinclair name.

Artic, the Liverpool-based software house, has written versions of the PLATON language for

the Spectrum and the ZX81, with 16K of RAM, priced at £14.95.

There will be a Small Business Accounts program for the 48K Spectrum, written by William and company, £12.95. And for the same model Paces and Tones game company Spectra have got together to bring out *Sorcerer*, costing £15.95.

Horsey, a character who has featured twice in computer games, has a new adventure in *Horsey and Spiders*, costing £5.95, by Paces and Billbourn. Horsey will be running in both Spectra.

And there are two more answers for both Spectra: *Backgammon*, by Paces at £9.95, and *Cyrus in Chess*, priced at £9.95 from Intelligent Software.

And for the 16K ZX81 Microvision, if providing two £4.95 games, *Saboteur* and *City Patrol*.

Computer users worried later than a new spending boom on a price advertising campaign in May and June, promoting a VIC-20, which has now sold 1.2m world-wide.

Improve your games

ACF is bringing out an improved version of its Spectrum and ZX81 joystick interface module in the middle of the month.

It retains most of the current joys, and ACF boss Adrian Henders, will now the joystick interface functional joystick interface module II, costing £29.95 by post, includes a program to draw in high resolution.

ACF Marketing, 26 Van Gogh Place, Bognor Regis, West Sussex PO21 3BT.

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Please state your computer when ordering.



Bombs away... it's the only way to land safely

Chopper is Shingo Suglura's first program for the Oric-1. It's easy to play, easy to understand and should be easy to extend

ADDRESS: 32 16 8 4 2 1 POINTS



10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20

10 = 3 + 4 + 20



32 = 16 + 8 + 4 + 2 + 1 = 32

32 = 16 + 8 + 4 + 2 + 1 = 32

32 = 16 + 8 + 4 + 2 + 1 = 32

32 = 16 + 8 + 4 + 2 + 1 = 32

32 = 16 + 8 + 4 + 2 + 1 = 32

32 = 16 + 8 + 4 + 2 + 1 = 32

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You are the pilot of a decrepit helicopter rapidly losing altitude above a built-up city.

If you crash you will inevitably die but by using the bombs on board and releasing them at the right time could create space for your helicopter to land.

How it works

10-170 on up screen
100-100 on message, option in reply

20-400 construction, 20000 difficulty level

100-100 data for bomb, building and helicopter

100-100 bombing, variable explosion, option to reply

The program uses pre-defined characters to good effect although using all the colours was beyond me.

Playing the game is very simple. You just press the space bar when you want to release the bombs but be careful, leave the fact that you are allowed only one bomb on the screen at a time, so you have to choose carefully when to release the bomb.

At beginning you choose the speed, destructiveness and the general difficulty.

The program consists of one main loop and several procedures which are called by GOSUBS.

The effect of moving the chopper is achieved by defining a spring which is half a space and the other half the chopper so that when it moves one character

Variables

P1 X co-ordinate of chopper

P2 Y co-ordinate of chopper

P3 chopper

B1 X co-ordinate of bomb

B2 Y co-ordinate of bomb

F flag to indicate whether a bomb is on the screen

W number of times bomb hits a building block

DE destructiveness level

SD difficulty

SP speed

position forward is automatically ruled out the last direction.

I have redefined the '1' to be the bomb, '2' to be the chopper and '3' to be a building block.

The drawings show the addresses, the shape of the screen, the characters and how I marked out the values to be POSED into the addresses.

Notes on conversion

The screen format of the Oric-1 is 40 by 20 and all characters colourless (no attribute).

PAPEL Y changes the background colour and white. PAPEL X changes the foreground colour.

PAPEL Y changes the background colour. PAPEL X changes the foreground colour.

PRINT CHR\$(10) moves the cursor down the screen. PRINT CHR\$(13) moves the cursor to the start of the line.

PRINT CHR\$(10) moves the cursor down the screen. PRINT CHR\$(13) moves the cursor to the start of the line.

How I designed (from top) the bomb, buildings and the helicopter

A black and white photograph of a Sikorsky HO4S helicopter, viewed from the side. The helicopter is dark-colored and features a main rotor with four blades, a tail rotor, and landing skids. It is positioned against a light background.

```

1000 LET I = 0:FOR J = 1 TO 10:FOR K = 1 TO 10:FOR L = 1 TO 10
1010 LET P = 0
1020 FOR M = 1 TO 10:FOR N = 1 TO 10:FOR O = 1 TO 10
1030 FOR P = 1 TO 10:FOR Q = 1 TO 10:FOR R = 1 TO 10:FOR S = 1 TO 10
1040 FOR T = 1 TO 10:FOR U = 1 TO 10:FOR V = 1 TO 10:FOR W = 1 TO 10
1050 FOR X = 1 TO 10:FOR Y = 1 TO 10:FOR Z = 1 TO 10:FOR AA = 1 TO 10
1060 FOR AB = 1 TO 10:FOR AC = 1 TO 10:FOR AD = 1 TO 10:FOR AE = 1 TO 10
1070 FOR AF = 1 TO 10:FOR AG = 1 TO 10:FOR AH = 1 TO 10:FOR AI = 1 TO 10
1080 FOR AJ = 1 TO 10:FOR AK = 1 TO 10:FOR AL = 1 TO 10:FOR AM = 1 TO 10
1090 FOR AN = 1 TO 10:FOR AO = 1 TO 10:FOR AP = 1 TO 10:FOR AQ = 1 TO 10
1100 FOR AR = 1 TO 10:FOR AS = 1 TO 10:FOR AT = 1 TO 10:FOR AU = 1 TO 10
1110 FOR AV = 1 TO 10:FOR AW = 1 TO 10:FOR AX = 1 TO 10:FOR AY = 1 TO 10
1120 FOR AZ = 1 TO 10:FOR BA = 1 TO 10:FOR BB = 1 TO 10:FOR BC = 1 TO 10:FOR BD = 1 TO 10
1130 FOR BE = 1 TO 10:FOR BF = 1 TO 10:FOR BG = 1 TO 10:FOR BH = 1 TO 10:FOR BI = 1 TO 10
1140 FOR BJ = 1 TO 10:FOR BK = 1 TO 10:FOR BL = 1 TO 10:FOR BM = 1 TO 10:FOR BN = 1 TO 10
1150 FOR BO = 1 TO 10:FOR BP = 1 TO 10:FOR BQ = 1 TO 10:FOR BR = 1 TO 10:FOR BS = 1 TO 10
1160 FOR BT = 1 TO 10:FOR BU = 1 TO 10:FOR BV = 1 TO 10:FOR BW = 1 TO 10:FOR BX = 1 TO 10
1170 FOR BY = 1 TO 10:FOR BZ = 1 TO 10:FOR CA = 1 TO 10:FOR CB = 1 TO 10:FOR CC = 1 TO 10:FOR CD = 1 TO 10
1180 FOR CE = 1 TO 10:FOR CF = 1 TO 10:FOR CG = 1 TO 10:FOR CH = 1 TO 10:FOR CI = 1 TO 10:FOR CJ = 1 TO 10
1190 FOR CK = 1 TO 10:FOR CL = 1 TO 10:FOR CM = 1 TO 10:FOR CN = 1 TO 10:FOR CO = 1 TO 10:FOR CP = 1 TO 10
1200 FOR CQ = 1 TO 10:FOR CR = 1 TO 10:FOR CS = 1 TO 10:FOR CT = 1 TO 10:FOR CU = 1 TO 10:FOR CV = 1 TO 10
1210 FOR CW = 1 TO 10:FOR CX = 1 TO 10:FOR CY = 1 TO 10:FOR CZ = 1 TO 10:FOR DA = 1 TO 10:FOR DB = 1 TO 10
1220 FOR DC = 1 TO 10:FOR DD = 1 TO 10:FOR DE = 1 TO 10:FOR DF = 1 TO 10:FOR DG = 1 TO 10:FOR DH = 1 TO 10
1230 FOR DI = 1 TO 10:FOR DJ = 1 TO 10:FOR DK = 1 TO 10:FOR DL = 1 TO 10:FOR DM = 1 TO 10:FOR DN = 1 TO 10
1240 FOR DO = 1 TO 10:FOR DP = 1 TO 10:FOR DQ = 1 TO 10:FOR DR = 1 TO 10:FOR DS = 1 TO 10:FOR DT = 1 TO 10
1250 FOR DU = 1 TO 10:FOR DV = 1 TO 10:FOR DW = 1 TO 10:FOR DX = 1 TO 10:FOR DY = 1 TO 10:FOR EZ = 1 TO 10
1260 FOR EA = 1 TO 10:FOR EB = 1 TO 10:FOR EC = 1 TO 10:FOR ED = 1 TO 10:FOR EE = 1 TO 10:FOR EF = 1 TO 10
1270 FOR EG = 1 TO 10:FOR EH = 1 TO 10:FOR EI = 1 TO 10:FOR EJ = 1 TO 10:FOR EK = 1 TO 10:FOR EL = 1 TO 10
1280 FOR EM = 1 TO 10:FOR EN = 1 TO 10:FOR EO = 1 TO 10:FOR EP = 1 TO 10:FOR EQ = 1 TO 10:FOR ER = 1 TO 10
1290 FOR ES = 1 TO 10:FOR ET = 1 TO 10:FOR EU = 1 TO 10:FOR EV = 1 TO 10:FOR EW = 1 TO 10:FOR EX = 1 TO 10
1300 FOR EY = 1 TO 10:FOR EZ = 1 TO 10:FOR FA = 1 TO 10:FOR FB = 1 TO 10:FOR FC = 1 TO 10:FOR FD = 1 TO 10
1310 FOR FE = 1 TO 10:FOR FF = 1 TO 10:FOR FG = 1 TO 10:FOR FH = 1 TO 10:FOR FI = 1 TO 10:FOR FJ = 1 TO 10
1320 FOR FK = 1 TO 10:FOR FL = 1 TO 10:FOR FM = 1 TO 10:FOR FN = 1 TO 10:FOR FO = 1 TO 10:FOR FP = 1 TO 10
1330 FOR FQ = 1 TO 10:FOR FR = 1 TO 10:FOR FS = 1 TO 10:FOR FT = 1 TO 10:FOR FU = 1 TO 10:FOR FV = 1 TO 10
1340 FOR FW = 1 TO 10:FOR FX = 1 TO 10:FOR FY = 1 TO 10:FOR FZ = 1 TO 10:FOR GA = 1 TO 10:FOR GB = 1 TO 10
1350 FOR GC = 1 TO 10:FOR GD = 1 TO 10:FOR GE = 1 TO 10:FOR GF = 1 TO 10:FOR GH = 1 TO 10:FOR GI = 1 TO 10
1360 FOR GJ = 1 TO 10:FOR GK = 1 TO 10:FOR GL = 1 TO 10:FOR GM = 1 TO 10:FOR GN = 1 TO 10:FOR GO = 1 TO 10
1370 FOR GP = 1 TO 10:FOR GQ = 1 TO 10:FOR GR = 1 TO 10:FOR GS = 1 TO 10:FOR GT = 1 TO 10:FOR GU = 1 TO 10
1380 FOR GV = 1 TO 10:FOR GW = 1 TO 10:FOR GX = 1 TO 10:FOR GY = 1 TO 10:FOR HZ = 1 TO 10:FOR HA = 1 TO 10
1390 FOR HB = 1 TO 10:FOR HC = 1 TO 10:FOR HD = 1 TO 10:FOR HE = 1 TO 10:FOR HF = 1 TO 10:FOR HG = 1 TO 10
1400 FOR HH = 1 TO 10:FOR HI = 1 TO 10:FOR HJ = 1 TO 10:FOR HK = 1 TO 10:FOR HL = 1 TO 10:FOR HM = 1 TO 10
1410 FOR HN = 1 TO 10:FOR HO = 1 TO 10:FOR HP = 1 TO 10:FOR HQ = 1 TO 10:FOR HR = 1 TO 10:FOR HS = 1 TO 10
1420 FOR HT = 1 TO 10:FOR HU = 1 TO 10:FOR HV = 1 TO 10:FOR HW = 1 TO 10:FOR HX = 1 TO 10:FOR HY = 1 TO 10
1430 FOR HZ = 1 TO 10:FOR IA = 1 TO 10:FOR IB = 1 TO 10:FOR IC = 1 TO 10:FOR ID = 1 TO 10:FOR IE = 1 TO 10
1440 FOR IF = 1 TO 10:FOR IG = 1 TO 10:FOR IH = 1 TO 10:FOR II = 1 TO 10:FOR IJ = 1 TO 10:FOR IK = 1 TO 10
1450 FOR IL = 1 TO 10:FOR IM = 1 TO 10:FOR IN = 1 TO 10:FOR IO = 1 TO 10:FOR IP = 1 TO 10:FOR IQ = 1 TO 10
1460 FOR IR = 1 TO 10:FOR IS = 1 TO 10:FOR IT = 1 TO 10:FOR IU = 1 TO 10:FOR IV = 1 TO 10:FOR IW = 1 TO 10
1470 FOR IX = 1 TO 10:FOR IY = 1 TO 10:FOR IZ = 1 TO 10:FOR JA = 1 TO 10:FOR JB = 1 TO 10:FOR JC = 1 TO 10
1480 FOR JD = 1 TO 10:FOR JE = 1 TO 10:FOR JF = 1 TO 10:FOR JG = 1 TO 10:FOR JH = 1 TO 10:FOR JI = 1 TO 10
1490 FOR JJ = 1 TO 10:FOR JK = 1 TO 10:FOR JL = 1 TO 10:FOR JM = 1 TO 10:FOR JN = 1 TO 10:FOR JO = 1 TO 10
1500 FOR JP = 1 TO 10:FOR JQ = 1 TO 10:FOR JR = 1 TO 10:FOR JS = 1 TO 10:FOR JT = 1 TO 10:FOR JU = 1 TO 10
1510 FOR JV = 1 TO 10:FOR JW = 1 TO 10:FOR JX = 1 TO 10:FOR JY = 1 TO 10:FOR JZ = 1 TO 10:FOR KA = 1 TO 10
1520 FOR KB = 1 TO 10:FOR KC = 1 TO 10:FOR KD = 1 TO 10:FOR KE = 1 TO 10:FOR KF = 1 TO 10:FOR KG = 1 TO 10
1530 FOR KH = 1 TO 10:FOR KI = 1 TO 10:FOR KJ = 1 TO 10:FOR KK = 1 TO 10:FOR KL = 1 TO 10:FOR KM = 1 TO 10
1540 FOR KN = 1 TO 10:FOR KO = 1 TO 10:FOR KP = 1 TO 10:FOR KQ = 1 TO 10:FOR KR = 1 TO 10:FOR KS = 1 TO 10
1550 FOR KT = 1 TO 10:FOR KU = 1 TO 10:FOR KV = 1 TO 10:FOR KW = 1 TO 10:FOR KX = 1 TO 10:FOR KY = 1 TO 10
1560 FOR KZ = 1 TO 10:FOR LA = 1 TO 10:FOR LB = 1 TO 10:FOR LC = 1 TO 10:FOR LD = 1 TO 10:FOR LE = 1 TO 10
1570 FOR LF = 1 TO 10:FOR LG = 1 TO 10:FOR LH = 1 TO 10:FOR LI = 1 TO 10:FOR LJ = 1 TO 10:FOR LK = 1 TO 10
1580 FOR LL = 1 TO 10:FOR LM = 1 TO 10:FOR LN = 1 TO 10:FOR LO = 1 TO 10:FOR LP = 1 TO 10:FOR LQ = 1 TO 10
1590 FOR LR = 1 TO 10:FOR LS = 1 TO 10:FOR LT = 1 TO 10:FOR LU = 1 TO 10:FOR LV = 1 TO 10:FOR LW = 1 TO 10
1600 FOR LX = 1 TO 10:FOR LY = 1 TO 10:FOR LZ = 1 TO 10:FOR MA = 1 TO 10:FOR MB = 1 TO 10:FOR MC = 1 TO 10
1610 FOR MD = 1 TO 10:FOR ME = 1 TO 10:FOR MF = 1 TO 10:FOR MG = 1 TO 10:FOR MH = 1 TO 10:FOR MI = 1 TO 10
1620 FOR MJ = 1 TO 10:FOR MK = 1 TO 10:FOR ML = 1 TO 10:FOR MM = 1 TO 10:FOR MN = 1 TO 10:FOR MO = 1 TO 10
1630 FOR MP = 1 TO 10:FOR MQ = 1 TO 10:FOR MR = 1 TO 10:FOR MS = 1 TO 10:FOR MT = 1 TO 10:FOR MU = 1 TO 10
1640 FOR MV = 1 TO 10:FOR MW = 1 TO 10:FOR MX = 1 TO 10:FOR MY = 1 TO 10:FOR MZ = 1 TO 10:FOR NA = 1 TO 10
1650 FOR NB = 1 TO 10:FOR NC = 1 TO 10:FOR ND = 1 TO 10:FOR NE = 1 TO 10:FOR NF = 1 TO 10:FOR NG = 1 TO 10
1660 FOR NH = 1 TO 10:FOR NI = 1 TO 10:FOR NJ = 1 TO 10:FOR NK = 1 TO 10:FOR NL = 1 TO 10:FOR NM = 1 TO 10
1670 FOR NO = 1 TO 10:FOR NP = 1 TO 10:FOR NQ = 1 TO 10:FOR NR = 1 TO 10:FOR NS = 1 TO 10:FOR NT = 1 TO 10
1680 FOR NU = 1 TO 10:FOR NV = 1 TO 10:FOR NW = 1 TO 10:FOR NX = 1 TO 10
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Got an Oric? Here's a tip

Thank you for a marvellous publication, and here's a tip for Oric users. If you're using **READ** and **DATA** in a program, then this may be of use to you.

The Oric-1 stores the pointer to the current data set within its locations 174 and 175, which are accessed by **PEEK** (174). I find this bit of information very useful indeed.

Does any of our owners have any **SAVE** bug? If you press **TAB** ON, it comes out as **SPC** (ON is very interesting, and I'm thinking of adding the machine back).

John Arns, Bolton, Tyne and Wear

Want to play games? Buy a micro

With regard to One Man's View in **HCW** No. 3, if Mr Robinson compared the prices of cassette & cartridge to a micro & cassette based software he would find it more viable to buy the micro.

My own opinion is that a game only machine is not purchased for "many day" experiences and to pay £10-£20 for a game is mad. Some cassette cartridges rank with early ZX81 "casual action" games in quality.

I am a true regular who waited for three years in the gaming industry and have four games: two home-brew, a ZX81 and a Spectrum. Out of the 30 programs I own, only one came from software houses, because like Mr Robinson I find some of the software available is a complete rip-off.

Finally one note of the industry Mr Robinson did not look at is software. The success of printing increases with each machine sold, through friends copying programs for friends & tips to tips.

When techniques are developed to stop this practice with a typed clinic to create sales take place, or will the software industry get off on the same to the video & record industry?

P.A. Adams, Redcar, Cleveland

Send your letters to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0BB. There's £5-worth of software for the best each week, so don't forget to name your computer. Queries cannot be answered on this page

Computers in Corby

The Universal Micro Club has changed its name. We are now meeting at the Lodge Park Sports Centre, Corby. Not where *Amos* who is mentioned in *Pe, We, BNC, Dragons, Spectators, Com modore 64* and other home microcomputers is most welcome.

Members start at 7.30 (1983 subscriptions are £4 for junior members and £6 for senior members over 18).

For further details and dates of meetings, contact Peter Wilson at Green Dalry 744443, or write to the address below.

Peter Wilson, 36 North Cape Walk, Corby, Northants NN18 9HQ

...and in Wales

Wales could you publish details of our micro club?

We are Bangor and District Micro User Group (BADMUG) and meet at Bangor Commerce Centre, High Street, Bangor every fortnight on Thursdays at 7.30pm. Further details from Dafydd Jones at the address below.

Dafydd Jones, Ffwdl Ffwrdd, Maelor Llan, Bangor, Gwynedd

Don't knock micro games

I was fascinated by the arithmetic used by the writer in "One Man's View", April 1983 (Games are killing the Micro Market), who seems to think that if you sell a third of all the cassettes within a decade on the last third of the decade, you have got an incredible opening.

It's more likely you have got an incredibly bad market teacher, or a talent for politics!

Anything which stimulates interest in computing is good. The basic use for micro is in the home at present must be for entertainment and education, and I see no reason in all why people should have to learn how to program in an order to enjoy the advantages.

Entertainment, of course, does not necessarily mean just playing games. Unfortunately a lot of customer awareness of other possibilities needs to be established before there will be a ready market for other types of software.

We shall be developing products for other home applications, and they won't be trivial things like personal organisers or home budgets. The aim will be entertainment, but not allied to games as such. (Though don't be surprised if an old game or two creeps in through the door.)

J.R. Bentley, Carmel Manor, Myrddin

Counting the cost of software

A quick glance at a magazine's computer software listings chart a few weeks would have shown Melbourne House's program, *The Hobbit*, near or at the top. Whether you like the program or not one thing is certain, it is expensive. This is a major problem in the Home Computer industry, and I am taking the opportunity to sound off about it.

I will use the Hobbit as a benchmark. For £14.95, what do I on the average hope to get? A program, of good quality admittedly, on a cassette... nothing special in that it comes in a pretty box,

with a comprehensive manual. As far as I am concerned, that is the only thing that puts the program up or higher than normal.

Perhaps the price of the book could be included, but in the advertisement the book is free. So where is the new package going? Into the pockets of Melbourne House, where else? And they get the copyright, as well.

Take *Automata's* *Phantom* as another example. £10 for a Basic program, with no fancy presentation nor free program. It will also charge for the Postman's compensation price, but when that goes into the pockets of Automata.

I could name other examples. *Black Crystal* from Camell Trade from Quakroo £9 for the £12.95 for *Black Crystal*? Why? The fact is almost endless. And why is it that software for different machines is priced differently? Simple software, for example, is cheap compared with the BBC or VIC.

I have noted the industry in depth. The prices for things like advertising may be quite good, but still.

My point is this. Why is the cost being cut while the company makes a quiet little profit? And, more importantly, why can one company sell a game for £3 while others charge £10 or more? I would be interested in a reply from one of the software companies.

Peter Swann, Weybridge, Surrey

★ Software blunder

London. London, of Melbourne House, said: "You have to take into account the high cost of producing *The Hobbit*. Due to initial development for four computers also put the program together, each working on one aspect on a part on the world of Hobbit, an expert games programmer, an artist to develop the graphics and a linguistic programmer to work on the natural language commands.

This amounts to quite a lot of expensive talent, and the whole thing involves 10 months work.

Other points include reference to the Tolkien estate and the book of *The Hobbit*, which normally costs £5.50.

The costs of developing software are higher than many people appreciate, and you have to pay for a good program."

Programs to cut a long job short

**Data Pack
VIC 20
£9.95**

Sumlock, Royal London House, 149 Shagan, Manchester M2 1NE

Hands up all those who helped justify their purchase of a VIC with the idea that they would use it for information storage and educational programs. OK, this one's for you.

In fact it's not out but these programs. They are all in Basic. What's more they are nothing like the average programmer with say 100+ hours programming experience couldn't knock off over a weekend without making a sweat.

There's Data File, Data Sort and Data Test. Data File sets up or searches and updates a very simple data base in the form of a two column list. You could, for example, use columns one for names and column two for phone numbers or birthdays.

Data Sort reads in data (in the more formal sorting a either alphabetically or numerically), ready to be re-recorded.

Data Test allows you to test data already entered, so that if your data was Kings and Queens of England with the years they reigned, it would pick coverages at random and tell you the dates.

The programs work on any size VIC, so only the memory use you have limits the amount of data. If you want more than one hundred names in your list, though, you would have to change the array dimensions.

The standard of programming could not be called elegant, structured or easy to follow, but it does at least seem to work.

B.B.

| | |
|-----------------|-----|
| instructions | 8% |
| ease of use | 75% |
| graphics | n/a |
| value for money | 40% |



You can take the sting out of programming by taking a short cut. Here our reviewers assess some of the latest utility programs for you



**Multisound
Synthesizer
VIC-20
£9.99**

Bonak, 31 Church St, Slough, SL1 1PT

If you ever had any fears about the versatility of the visual capabilities of the VIC-20, this program will rapidly dispel them. The multisound synthesizer enables you to develop melodies melodies in a relatively simple way.

The four function keys are used to provide the main options. As each key is pressed, the instructions for that particular option are displayed on the screen.

It provides a "Keyboard" for the playing of a melody. All combinations of the three voices are possible with effects including vibrato, delay and tremolo.

It gives you a display box with six preset drumming patterns. I particularly liked the tempo and walk. A tempo control is provided.

It enables you to save up to four preprogrammed backgrounds (sequences consisting of up to 255 notes). These can be saved on tape if required.

It provides similar options to FI but acts on the whole notes generator.

Using these options you can set up the drums and background sequence and then play a melody over the top of them.

My main criticism was the lack of drum instructions. The package is easy to use once you have sorted out the commands, but getting to know how it works was not so easy.

While Multisound Synthesizer comes in a booklet of detailed step by step instructions with examples for the user to try.

A second criticism is that the layout of the "keyboard" obtained from FI was not logical. A piano style layout would be easier to use.

But all in all, the multisound synthesizer is an incredibly versatile package which can be used to produce surprisingly complex musical sequences. Very good value, and will provide many hours of entertainment.

A.W.

| | |
|-----------------|-----|
| instructions | 80% |
| playability | 75% |
| graphics | n/a |
| value for money | 80% |



**Speakeasy
48K
Spectrum
£4.95**

Quickline, 13 Palmerine Road, Southampton SO4 1LL

With several of Quickline's programs now using synthesized speech, Speakeasy seems a natural addition to their software catalogue for those who wish to add speech to their own base of machine-code programs.

The program is menu-driven and the user is given six options enabling him to record, playback, save and edit speech or music. The speech or music is stored into the computer's memory by playing it through the Spectrum's ear socket with the program in record mode.

Recording takes a minute or two, although when played back, it lasts only about ten seconds (once a large amount of memory is required to store the digital sound).

Once loaded, the sound can be edited by changing the start and length points which control which part is played using the playback option. Once you are satisfied with the effort, you can then save the passage to tape.

The saved passage loaded at any time using the LOAD "" CODE instruction and then played back using a USB voice call, where 0000 is the start address of the sound. This address is also stored in the directory of the passage as "SPOXX".

The quality of the sound is not excellent, but it is suitable enough for most purposes. The program itself is easy to use, although the instructions given within the program are rather confusing and long-winded. But this does not affect the utility of a very clever and useful program.

I.O.

| | |
|-----------------|-----|
| instructions | 60% |
| ease of use | 75% |
| graphics | 70% |
| value for money | 60% |



How to get a quart into a pint pot of memory

Memory is a limited resource particularly in the ZX81. Nick Godwin's programming tips will help make your RAM go further

Anyone who writes programs for the ZX81 soon comes up against a major obstacle: lack of memory. Even with a 128K RAM expansion you may find that available memory places strict limits on your programming.

But there's more than one way to write a program. Using any memory-saving tips, you can



FOR J=CODE "A" TO CODE "Z" (FOR J=26 TO 65 STEP 4
STEP CODE "A")

as much as double the amount of data that will fit into RAM.

Firstly, avoid using numbers in program lines. A number in a program line takes the following form:



The first part (display) takes up a number of bytes equal to the full length of the number including any minus sign or decimal point. The next byte always contains the value 128.

Finally, a further five bytes contain the number as coded from 0 to 255. Thus there is, in effect, an overhead of six

bytes on each number. Here are a few examples:

| Number | Bytes used |
|--------|------------|
| 0 | 7 |
| 1 | 7 |
| 10 | 8 |
| -10 | 9 |
| 10.6 | 10 |
| -10.6 | 11 |
| 100 | 10 |
| -100 | 11 |

There are three ways to reduce this wastefulness.

1. Where possible, use the

CODE function to represent a number. Here are some examples:

| Number | Bytes used | Code | Bytes used | Bytes saved |
|--------|------------|--------------|------------|-------------|
| 0 | 7 | CODE "I" | 3 | 4 |
| 10 | 8 | CODE "J" | 4 | 4 |
| 100 | 9 | CODE "COSUB" | 4 | 5 |

You can only use this method for certain numbers: 0-10, 10.44 and 128-255. The code for each number can be found in the table starting on page 181 of the ZX81 manual. Note that in the case of certain keywords (eg COSUB), it is

necessary to first type THEN, followed by the keyword. THEN must then be deleted. Function keywords (eg TAN, code 26) can be entered by first pressing FUNCTION.

Here are some examples of this technique in use:

```
LET X=CODE "I" (LET X=0)
PRINT CODE "COPY" (PRINT 25)
```

2. When CODE cannot be used, VAL may be preferred. Here are some examples:

| Number | Bytes | VAL "Three" | Bytes used | Saving |
|--------|-------|--------------|------------|--------|
| 1 | 7 | VAL "I" | 4 | 3 |
| -1 | 8 | VAL "-I" | 5 | 3 |
| 10 | 8 | VAL "10" | 5 | 3 |
| 1000 | 10 | VAL "1000" | 6 | 4 |
| 10000 | 11 | VAL "10000" | 7 | 4 |
| 100000 | 11 | VAL "100000" | 8 | 3 |

Here are some examples of use:

```
GOTO VAL "100" (GOTO 100)
LET X=VAL "100" (LET X=100000)
FOR J=VAL "100" TO VAL "1000" STEP (FOR J=100 TO 1000 STEP 1)
VAL "1"

```

VAL and CODE can be mixed on FOR...TO statements, eg:

```
FOR J=CODE "I" TO VAL "100" (FOR J=26 TO 100)
```

Certain uses of VAL are not allowed if used as part of a mathematical expression; the VAL part must come first. Other

this limitation can be overcome by enclosing the whole of the expression in quotes and preceding it with VAL.

```
LET X=X+1 (12 bytes)
LET X=VAL "1" + X (19 bytes)
LET X=VAL "X+1" (19 bytes)
```

The last method can be very useful for long and complicated expressions. Here are three alternative ways of writing the same expression, which increments or

decrements X within certain limits, according to the value of Z (is likely to be used in games requiring "move", or in "drawing board" type programs).

```
LET X=X+(X < 0)*Z-(X > 0)*Z (43 bytes)
LET X=X+(X < 0)*CODE "Z"*(Z=CODE "I") (49 bytes)
— (X<0)*CODE "I"*(Z=CODE "I")
LET X=VAL "X+(X < 0)*Z-(X > 0)*Z=10" (54 bytes and easier to write)
```

ZX81 PROGRAMMING

A further limitation on the use of VAL is that it must not be used for the second part of a co-ordinate pair, eg. PLOT VAL "10", VAL "10".

3 Where the same number is used over and over again in a program, for example to call a subroutine, it can be replaced with a variable assigned at the beginning of the program. This can also serve as a useful mnemonic, eg.

```
LET INP = VAL "104"
GOSUB INP
```

```
10 LET X$ = "1000123456789012345678901234567890"
20 INPUT X
30 IF X CODE " " THEN GOTO CODE "-"
40 PRINT VAL X*VAL "47X-3" TO VAL "47X")
50 GOTO CODE "-"
```

RUN, and enter 1 - 10. The value displayed is the approximate number stored, for example, enter 2 to print the number 2716.

```
10 LET X$ = ""
20 DIM Q$ VAL "47")
30 INPUT X
40 IF LEN STR$ X > LEN Q$ THEN GOTO CODE "7"
50 IF NOT X THEN GOTO VAL "100"
60 LET Q$ = STR$ X
70 LET X$ = X$ + Q$
80 GOTO CODE "7"
90 FOR J = VAL "1" TO LEN X$ STEP LEN Q$
110 PRINT X$(J) TO VAL "J+LEN Q$-1")
120 NEXT J
```

RUN, and enter a number of values none of which exceeds six digits (including decimal point or minus sign) or length. Finally, enter zero to obtain a display of all the numbers entered.

Access to any number is achieved by an instruction such as LET X = VAL X\$(a-1) TO a*50, where a is the reference to the number (eg. a = 3 to collect the third number).

The maximum length of the number is set by line 30. Try changing this, eg. to VAL "10" (50 approx).

Values can also be stored in

in this example, INP may be a mnemonic for INPUT and refer to a subroutine which deals with input to the program, and the value represented as INP. Thus the GOSUB instruction means "GOSUB INP".

A second method of using memory is to avoid, where possible, using arrays of numbers, as these require 5 bytes for each value stored. Numbers can often be adequately stored as a string. One way is to use numbers in comparison with VAL. Try this:

The same principle can be used to store and recall numbers, provided these are limited in length, as the following routine illustrates:

```
10 LET X$ = ""
20 INPUT X
30 IF NOT X THEN GOTO VAL "100"
40 IF X = VAL "25000" THEN GOTO CODE "-"
50 LET X$ = X$ + CHR$ VAL "INT (X/25000)"
60 LET X = VAL "X-(25000*CODE X$)LEN X$"
70 LET X$ = X$ + CHR$ VAL "INT (X/250) + CHR$ VAL "X-(250*INT (X/250))"
80 GOTO CODE "-"
90 FOR J = VAL "1" TO LEN X$ STEP VAL "1"
110 PRINT VAL "25000*CODE X$(J) + 250*CODE X$(J+1) + CODE X$(J+2)"
120 NEXT J
```

Negative values can be incorporated, as in the following routine, adapted from the above:

```
10 LET X$ = ""
20 INPUT X
30 IF NOT X THEN GOTO VAL "100"
40 LET X = VAL "X + 0.00001"
50 IF X = VAL "25000" THEN GOTO CODE "-"
60 LET X$ = X$ + CHR$ VAL "INT (X/25000)"
70 LET X = VAL "X-(25000*CODE X$)LEN X$"
80 LET X$ = X$ + CHR$ VAL "INT (X/250) + CHR$ VAL "X-(250*INT (X/250))"
90 GOTO CODE "-"
100 FOR J = VAL "1" TO LEN X$ STEP VAL "1"
110 PRINT VAL "25000*CODE X$(J) + 250*CODE X$(J+1) + CODE X$(J+2)"
120 NEXT J
```

I make no claim that the techniques described here exhaust all the possibilities. The best way to deal with any particular pro-

gram depends on the order of the values which it is to handle. Tailor the technique to meet each situation.



```
10 LET X$ = ""
20 INPUT X
30 IF NOT X THEN GOTO VAL "100"
40 IF X = VAL "25000" THEN GOTO CODE "-"
50 LET X$ = X$ + CHR$ VAL "INT (X/25000) + CHR$ VAL "X-(25000*INT (X/25000))"
60 GOTO CODE "-"
70 FOR J = VAL "1" TO LEN X$ STEP VAL "1"
110 PRINT VAL "CODE X$(J)*250 + CODE X$(J+1)"
120 NEXT J
```

The program stores each number as two bytes, the first of which is the most significant (or largest) part. The same principle

can be applied to larger values, which can be stored in four bytes (maximum value $250^{100} - 1$). For example

ARCADE

**ASTEROIDS, INVADERS,
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Abstract

Another reason for the rapid growth of the program is the fact that the program is a part of the overall effort to improve the quality of the nation's health care system. The program is a part of the overall effort to improve the quality of the nation's health care system.



05400000

The presence of
complex within the structure
of the system. In addition, the
use of three modes (typical
structure) increases the
complexity of the system.



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| 1990 | 1990 | 1990 | 1990 | 1990 | 1990 |

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Revised Manuscript for PLOS ONE



PRIMAWARE
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Abstract

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Get great graphics — a portable program for the VIC

Almost VIC owners will agree, the VIC-20, by one of the reasonable characteristics, can be used to display high resolution graphics.

For those have not encountered the term high-resolution graphics, it's a system by which individual points on the screen can be addressed and altered so you can produce graphs or pictures.

The basic VIC-20 has no commands for such graphics, so you must buy a CBM Super Expander or a VICAR to use high-resolution graphics easily. The big problem is that any software using a specific and reliably run on a computer fitted with the same set — programs are not portable between machines.

In order to provide portable high-resolution graphics, I have developed Tiny Graph, an *Like-ing* L with an optional low plotting program.

Due to the design of the 6502 chip, a set only access a character set located in the ROM space or in the unexpanded RAM area (in locations \$A000-\$BFFF).

In a standard VIC, on a VIC with 3 KB expansion, the present little problem since some of the memory area can be accessed. When the memory is expanded by 8K or more, things get a little difficult.

The VIC relocates the screen memory to \$1000 and the start of BASIC to \$1000. Suddenly there is no free RAM for relocated character set.

A high-resolution screen of 175 by 100 points requires some 15K of RAM for storage. This is conveniently the amount of space available in the unexpanded VIC. Where required is a rearrangement of the allocation of RAM space such that an expanded VIC has the same screen location as an unexpanded VIC.

The new memory map is shown in Figure 1. Since the Tiny-Graph kernel is roughly 600 bytes long, the start of BASIC must be automatically moved to above \$2000. This means that at least 8K expansion will be necessary in order to use the Tiny-Graph package.

Don't worry if the memory

High resolution graphics, without buying a special add-on. Use Allen Webb's package and your programs will also work on your friends' VIC-20s

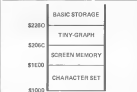


Figure 1

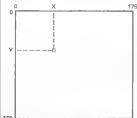


Figure 2

arrangement is not ideal, the software plus a simple command will take care of everything.

The VIC must be cold started by either switching it off and then

on or by a SYS4900 call. This requires that all vectors are reset. Type in the following line and press RETURN.

```
POKE 641,0 POKE 642,0
```

POKE 643,30 :SYS 4900

This step resets the start of BASIC to \$1000 and the screen position to \$1000.

Load and run the Tiny-Graph loader. The loader places the Tiny-Graph code into the area shown in Figure 1, and does not run to BASIC.

To produce any possible interference from toolbars or other ROMs using the Charge! wedge, all Tiny-Graph commands use SYS calls.

Before the plotting commands can be used, the high-resolution screen must be set up and cleared. This is done by a SYS4300 call. This after the call has been made, you will see a clear screen which is slightly smaller than the usual screen. There will be no cursor.

This screen, at first, now consists of 25,160 addressable points. The screen is configured with a width of 175 points and a height of 100 points. The origin is at the top left hand corner — see Figure 2.

In order to simplify the description on the plotting commands, I have defined the various registers used by the package in Table 1. These registers will be referred to only by name from now on.

The first four commands perform actions on single points on the screen. In all cases the X coordinate of the point is POKE'd into XP and the Y coordinate into YP.

SYS 4880 will set or clear the point. A value of 1 or FLAG sets the point and a value of 0 clears it.

SYS 4440 flips the point, i.e. a set point is cleared and a cleared point set.

SYS 4880 sets the status of the point and returns a value in TEST. If the point is set, TEST contains 1. A cleared point returns a value of 0.

SYS 4880 will change the color of the point to that in COLOR, or if COLOR contains 0 then the point will be changed to black.

In order to get points of a

VIC-20 PROGRAMMING

Listing 1

```

10 GOTO 1000
20 FOR X=0 TO 1000 STEP 10
30 GOTO 1000
40 GOTO 1000
50 GOTO 1000
60 GOTO 1000
70 GOTO 1000
80 GOTO 1000
90 GOTO 1000
100 GOTO 1000
110 GOTO 1000
120 GOTO 1000
130 GOTO 1000
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170 GOTO 1000
180 GOTO 1000
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790 GOTO 1000
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810 GOTO 1000
820 GOTO 1000
830 GOTO 1000
840 GOTO 1000
850 GOTO 1000
860 GOTO 1000
870 GOTO 1000
880 GOTO 1000
890 GOTO 1000
900 GOTO 1000
910 GOTO 1000
920 GOTO 1000
930 GOTO 1000
940 GOTO 1000
950 GOTO 1000
960 GOTO 1000
970 GOTO 1000
980 GOTO 1000
990 GOTO 1000
1000 GOTO 1000

```

specified below, follow SYS 6000 with SYS 6000. Here are examples:

```

80 SYS 6000: POKE 80,1
90 FOR X=0 TO 1000: Y=X
100 POKE 80,X: POKE 80,Y
1100 SYS 6000: SYS 6000: NEXT X

```

The last commands draw straight lines. There are simplified routines which draw lines with either vertical or horizontal lines. Since these routines plot only horizontal or vertical lines, the line can be specified by three values. These can be POKE'd into the

nearest registers before the SYS command. Additionally, the registers are changed by the plotting routines and must be re-initialized prior to subsequent calls. SYS 6000 draws a horizontal line. The Y coordinate is placed in YP,

and the starting and ending X coordinates are LSTART and LEND. The routines do not check to see that LSTART is less than LEND. You must ensure that. The color of the line is put into COL, and the type of line — on or else — into FLAG.

SYS 6000 draws a vertical line. The X coordinate is placed into XP, and the Y coordinates are LSTART and LEND. The color and line type are set as before.

SYS 6004 flips a horizontal line. This command erases the points along a specified line and flips the status of each point. The coordinates of the line are input as in the draw horizontal line command.

Here's a simple example to Listing 1.

That completes the description of the commands controlling the Tiny-Graph Kernel. I call the routines the kernel, since they provide all the fundamental routines necessary to perform any drawing operation. These routines have been fully tested and are believed to be free from bugs.

I will give details of a further optional lineplotting routine which is still at the development stage. This routine contains a small bug because it is made to perform asynchronously. This routine will draw or clear (depending on FLAG) a line between two points. If the points have coordinates (X1,Y1), (X2,Y2) then the routine is set up by:

```

POKE 80,X1: POKE 80,Y1
POKE 80,X2: POKE 80,Y2
SYS 6004

```

The routine behaves if the direction between both sets of coordinates exceeds 128, i.e. ABS(X1-X2) > 128 and ABS(Y1-Y2) > 128.

It has also been known to misbehave if only one set of coordinates is above another. So, provided you ensure that the routine will do as you wish.

The routine has been given a separate listing, but is copyrighted onto the end of the kernel listing. If you want, allow for the new length of the code by changing the memory initialization command to:

```

POKE 8041,0: POKE 8042,17
POKE 8043,0: SYS 6004

```

While the ability to plot on the high resolution screen has been omitted from Tiny-Graph, the use is dimensionally. The routine in Listing 3 will plot a character (ASCII) at specified X,Y coordinates.

Last 30 overlaps the character

ZX81

16K

SPECTRUM

16/48

DRAGON

32

TANDY

LEVEL 2

BBC

A/B

AWARI

- ★ The ancient African game of logic. It takes 2 minutes to learn the rules but far longer to master the tactics.
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- ★ Select the 'Flash-dealer' level and it's a thrill to your sanity. We haven't beaten it and we won't!

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- ★ Multiple word commands and single letter abbreviations!

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VIC 30

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Share the fun with a game written for two

Family and friends can join in with David Nowotnik's Four-in-a-Row game for both Spectrum models



Most video games are essentially one-on-one. They involve one player battling against forces generated by the computer.

And while this provides enjoyment for the player, it could be irritating other members of the family — all those sighs and explosions for hours on end.

If all this sounds painfully familiar to you, and maybe your satisfaction is getting so you, then here's a friendly little game for two to play on the Spectrum.

While not guaranteed to restore family harmony, you may find that it removes at least some of the hostility towards you and your beloved computer.

Of the few video games for more than one player, most are based on non-video games which are commercially available. This one is no exception.

The name, *Four-in-a-Row*, describes the objective — to create a row (horizontally, vertically, or diagonally) of four of your counters on a four-by-four matrix, and prevent your opponent from doing the same.

The matrix will appear on the screen as 40 rounded holes in a black board.

Each player takes turns to drop a counter of his/her colour into one of the seven columns, by pressing the appropriate key, 1 to 7, as shown on the screen. Once a key is pressed, the counter will appear on the screen just above the selected column of the matrix.

After a short pause, the counter will fall down the column until it reaches the lowest available position.

The second player makes his/her selection, and the procedure is repeated.

The game continues until one player achieves the objective. At this point, the four squares which form the row of four flash on and off to provide visual confirmation of victory.

The program is suitable for both 16K and 48K Spectrums. Once you have typed the program into your computer, it is started with RUN.

One point to note when entering the program: the characters A, B, C, D as lines 580, 570, and 740 should be entered in graphics mode.

They become the user-defined characters forming the counters and "board" once the program is RUN. (See LIST the

program after RUN to confirm this).

The colours of the background and counters are quite distinct on a colour TV set, but their corresponding shades of grey on a black and white set may need interpretation.

To do this, try altering the values of INK and PAPER commands, and the colour of the counters defined at line 600.



SPECTRUM PROGRAM

```

100 REM *****
200 REM S.P. Spectrum, 1988
300 REM Description
400 REM author: Stephen (S) and (S)
500 LET counter=0
600 REM *****
700 REM *****
800 REM *****
900 REM *****
1000 REM *****
1100 IF (S) THEN LET (S) LET (S)
1200 REM *****
1300 REM *****
1400 REM *****
1500 REM *****
1600 REM *****
1700 REM *****
1800 REM *****
1900 REM *****
2000 REM *****
2100 REM *****
2200 REM *****
2300 REM *****
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2700 REM *****
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2900 REM *****
3000 REM *****
3100 REM *****
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3600 REM *****
3700 REM *****
3800 REM *****
3900 REM *****
4000 REM *****
4100 REM *****
4200 REM *****
4300 REM *****
4400 REM *****
4500 REM *****
4600 REM *****
4700 REM *****
4800 REM *****
4900 REM *****
5000 REM *****
5100 REM *****
5200 REM *****
5300 REM *****
5400 REM *****
5500 REM *****
5600 REM *****
5700 REM *****
5800 REM *****
5900 REM *****
6000 REM *****
6100 REM *****
6200 REM *****
6300 REM *****
6400 REM *****
6500 REM *****
6600 REM *****
6700 REM *****
6800 REM *****
6900 REM *****
7000 REM *****
7100 REM *****
7200 REM *****
7300 REM *****
7400 REM *****
7500 REM *****
7600 REM *****
7700 REM *****
7800 REM *****
7900 REM *****
8000 REM *****
8100 REM *****
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8300 REM *****
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8600 REM *****
8700 REM *****
8800 REM *****
8900 REM *****
9000 REM *****
9100 REM *****
9200 REM *****
9300 REM *****
9400 REM *****
9500 REM *****
9600 REM *****
9700 REM *****
9800 REM *****
9900 REM *****
10000 REM *****

```

```

1000 REM *****
1100 REM *****
1200 REM *****
1300 REM *****
1400 REM *****
1500 REM *****
1600 REM *****
1700 REM *****
1800 REM *****
1900 REM *****
2000 REM *****
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2200 REM *****
2300 REM *****
2400 REM *****
2500 REM *****
2600 REM *****
2700 REM *****
2800 REM *****
2900 REM *****
3000 REM *****
3100 REM *****
3200 REM *****
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3700 REM *****
3800 REM *****
3900 REM *****
4000 REM *****
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9500 REM *****
9600 REM *****
9700 REM *****
9800 REM *****
9900 REM *****
10000 REM *****

```



ZX Trek Spectrum 48K £5

Impact Software, 79 Redford Avenue, Edinburgh EH11 0PW
0204

ZX Trek, based on the TV programme of the same name, was one of the original computer game classics. This version has all the features of the original, plus several refinements.

A two-dimensional graphics display of long and short range stars and a wealth of textual status reports guide you as you voyage the known galaxy, eliminating Klingons and Romulans, using machines to repair and refuel the Enterprise.

Written in Basic, this is a fairly slow game, and boys often tend to be held down before they respond. The instructions supplied are comprehensive and lengthy and need careful reading — frequent reference to them is also necessary when playing. But nowhere in the instructions is the number-direction relationship properly explained.

Colour is used well. Sound effects are optional, but using sound slows the game down. Graphics are poor, isometric representation of the starship's shape, and the display tends to be confusing.

Since the game takes a long time to complete, a save game feature would have been useful, but there isn't one.

A good version of an old favourite. A year on it would have been superb; today it has been superseded by machine-coded multiplatform versions such as *Trek Wars*. **B.J.L.**

| | |
|-----------------|-----|
| instructions | 80% |
| playability | 50% |
| graphics | 50% |
| value for money | 60% |



QS Asteroids 16K ZX81 £3.95

Quadrant, Palmerston Park House, 31 Palmerston Road, Southampton

A surprisingly modern game, considering the limitations of the ZX81's character set, is *Asteroids*

standard arcade format, with wrap-around screen, bonus ships and increasing scoring.

Controls, too, are of the standard arcade type and can be operated simultaneously — very useful for opening and firing at the same time.

The only drawback is the use of numbers to represent the eight possible directions the ship can point in, but those of you with pro-

grammable character boards will be able to substitute characters of your own in place.

A well-produced cassette version contains step-by-step, no-nonsense operating and loading instructions. Also included is a card listing useful variables such as number of ships and score for bonus ships.

Provision to control the game via switches connected to two

Games without frontiers

You can be a tank commander one minute and a space fighter the next with these new games for your micro. Our reviewers have played them — here are their ratings



Slippery Sid Spectrum £3.95

Silversoft, 20 Orange Street, London WC2H 9ED

In this game you use the keyboard or a Kensington joystick to control a large snail called Slippery Sid. Sid must eat all the frogs within a walled garden without hitting the walls or any of the poisonous beetles that appear every time he swallows a frog.

As Sid eats the frogs he gets larger and moving him around becomes more difficult — he will die if he attempts to eat himself!

Many mushrooms grow in the garden. If Sid eats one of these, he may swallow one poisonous toad. As Sid clears the garden of frogs, he finds himself in another garden with more walls and a larger number of frogs.

The instructions supplied are adequate and the program LOADS every time. You are given five skill levels plus speed at which Sid moves and highest score is recorded, but not the player's name. On entering the fourth garden, you are left with life (you start with three).

The review copy seemed to have a bug that caused Sid to randomly change direction at the most inconvenient times. Even with this added handicap Slippery Sid is a highly addictive and enjoyable game.

It is simple in operation and the increasing difficulty level from garden to garden is well balanced to give the beginner and expert alike a good run for their money. **P.J.L.**

| | |
|-----------------|-----|
| instructions | 80% |
| playability | 50% |
| graphics | 70% |
| value for money | 75% |



eight-bit ports has been included in the program. The manufacturers will send details if you send them an SAE.

D.S.

| | |
|-----------------|-----|
| instructions | 90% |
| playability | 80% |
| graphics | 70% |
| value for money | 90% |



Asteroids 16K ZX81 £4.95

Mariposa, 34 Apple Crescent,
Barnet, Herts

It's baffling. Why does a computer with all the makings of a good version of this arcade classic refuse to behave if it isn't given one or two of playing fields?

The graphics are not enough good-looking asteroids that shatter into fragments into fragments when you fire at them (five different sizes of fragment, according to the size, but what's counting?).

As well as blasting the asteroids themselves, you can also fire at other unidentified flying objects to gain extra points.

There are ten different speed levels on offer, and on the fastest (1), the action is very fast indeed. I'd hesitate to call these 'stef' levels, though, since as the asteroids slow down, you slow down too.

In practice this means that the slow levels aren't really easier than the fast ones, and here the added hazard that, once you have cleared the screen a little, you may end off during the busy periods where

nothing happens. Working below level 3 is worth considering.

Most seriously, however of the three levels. Press A and you zoom wildly out of control, and taking your finger off the key has no effect. All you can do is relax and enjoy the scenery while you crash into something and see concentrated frowning as you pass three lives are left.

Because you can't actually avoid any of the asteroids, the skill content of the game is drastically reduced. Much the best tactic, certainly until the screen has been cleared of the larger fragments, is to sit tight with your fingers jammed on the escape and fire buttons. You can get quite a high score that way and, while you are spinning, you seem to gain some immortality to boot.

The game usually ends when your fingers go numb and stop-off the keyboard. There is an option to get joystick, but it's probably fortunate that few ZX81 owners have them, otherwise this game could go on all night.

CAL

| | |
|-----------------|-----|
| instructions | 10% |
| playability | 60% |
| graphics | 15% |
| value for money | 10% |



Frogger Plus Video Genie £4.99

Bostonsoft Software, 14 Western Avenue, Biddenden, Kentley, York

A machine-code version of the arcade game, you have to move your frog safely across a busy road then over a river, using turtles, his pals and legs as stepping stones. But watch out for the crocodiles!

Though instructions on how to get into the game are displayed, the rules are not clearly stated, and knowledge of the arcade version seems to be assumed. The instruc-

tions state that sideways movement is via the "←" and "→" keys. But both of these are shifted characters, and "←" and "→" the unshifted versions of the same keys, work just as well.

Reasonable graphics, considering the low resolution offered by the 1 x 3 pixel screen, but you really need a second look to take advantage of all the effects.

R.M.J.

| | |
|-----------------|-----|
| instructions | 60% |
| playability | 70% |
| graphics | 70% |
| value for money | 30% |



Wargame T19/4A £6

TK Software, 100 Abbotswell, Haverly, CM11 6TQ

Wargame, at its name suggests, tests your skill as a strategist and tactician against that of the computer or another player.

The display shows you a randomly produced map, depicting hills, forests, swamp and water together with the terrain on which each player has three home bases. You are in command of a number of tanks and guns, and have the task of attacking and destroying your opponent's bases as well as defending your own.

Tanks and artillery are moved across the varying landscape using either a combination of keys or joystick, and an advantage can be gained in a disadvantage incurred, depending on where you place your pieces.

When you are within range of an enemy base, attacking fire mode displays a range and direction finder on the screen to help you get the target in your sights. This process quite tricky to use and practice is needed in order to become a competent tactician.

Graphic display and colour are used efficiently, enabling you to easily identify your, and your opponent's pieces and the nature of the terrain you intend to move into. Some sound is used for shell explosions and the running down of tank engines when they are hit.

The program runs

smoothly without any apparent lags in loading or playing. Instructions are not displayed on screen, but a fairly adequate set of printed instructions are included in the package. A set of options enable you to vary the speed of your tanks in the firing range of your guns, and these along with three skill levels, add to the variety of the game.

The game lasts a reasonable amount of time, and makes a refreshing change from being blown out of hyperspace in one second that it is quite slow moving, but then the emphasis is on strategy, and there is plenty to think about during the game.

At the price, a worthwhile application for anyone who enjoys these boardgame-type of games.

| | |
|-----------------|-----|
| instructions | 60% |
| playability | 70% |
| graphics | 70% |
| value for money | 60% |



Invaders 32K BBC £7.50

TK Software, 9 King Street, Blackpool, Lancashire

This is a full blown implementation of the arcade game, with a series of eight invaders descending and bombing your base and then retreats. Good for beginners and expert alike, having an increasing difficulty level, a 3 x 3 screen on machine code and use to the full the sound and colour graphics of the BBC.

The packaging is slick and in a nice sturdy case of home on board, added by a rubber stamp. The video program loaded first and a video and control set of instructions was provided on cards.

Playing the game was no

problem and you guess that you moved keys a good game down. The keys — Z and X, for left and right with the space bar to fire — are easy to use and respond to the display game.

Apart from the basic version, you can set up your own game by mapping any of the firearms, tank or slow modes, shields or no shields, even possible invaders!

The only improvement I can think of would be a chain of high scores and player's names — the highest score is kept and displayed anyway.

B.L.

| | |
|-----------------|-----|
| instructions | 60% |
| playability | 60% |
| graphics | 60% |
| value for money | 60% |



Every game is different when you play Simon Scott's Munch Maze. It's in two parts to make best use of memory in the unexpanded VIC-20

My Munch Maze game, for the unexpanded VIC-20, gives you a new challenge every time you play because it draws a fresh maze.

It takes about 10 seconds to create the maze and then fruit — apples, bananas and lemons — are placed at random. When this is done all the dots on the screen start to flash which means the game is in progress.

Then have to move around the maze eating the dots, at one point each, and the fruit, which score 10 points each.

How it works

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0-4 | 1-3 | 4-5 | 6-7 | 8-9 | 10-11 | 12-13 | 14-15 | 16-17 | 18-19 | 20-21 | 22-23 | 24-25 | 26-27 | 28-29 | 30-31 | 32-33 | 34-35 | 36-37 | 38-39 | 40-41 | 42-43 | 44-45 | 46-47 | 48-49 | 50-51 | 52-53 | 54-55 | 56-57 | 58-59 | 60-61 | 62-63 | 64-65 | 66-67 | 68-69 | 70-71 | 72-73 | 74-75 | 76-77 | 78-79 | 80-81 | 82-83 | 84-85 | 86-87 | 88-89 | 90-91 | 92-93 | 94-95 | 96-97 | 98-99 |
| 0-4 | 1-3 | 4-5 | 6-7 | 8-9 | 10-11 | 12-13 | 14-15 | 16-17 | 18-19 | 20-21 | 22-23 | 24-25 | 26-27 | 28-29 | 30-31 | 32-33 | 34-35 | 36-37 | 38-39 | 40-41 | 42-43 | 44-45 | 46-47 | 48-49 | 50-51 | 52-53 | 54-55 | 56-57 | 58-59 | 60-61 | 62-63 | 64-65 | 66-67 | 68-69 | 70-71 | 72-73 | 74-75 | 76-77 | 78-79 | 80-81 | 82-83 | 84-85 | 86-87 | 88-89 | 90-91 | 92-93 | 94-95 | 96-97 | 98-99 |

According to all sorts of puzzling goblin who is wandering around the maze. The consequences of meeting him could be fatal... and you have only got one life.

If you manage to clear all the dots and fruit the goblin comes into a guarantee while the maze is being regenerated with dots and fruit.

Main variables

ALL point max
FL flag
C colour
PWR col goblin character (PWR)

Fill yourself with fruit, but watch out for the goblin

```
0 POKE36865,255:POKE36879,255:POKE36878,1
1 PRINT "000111111R"
2 PRINT "111111R MUNCH MAZE"
3 PRINT "111111R"
4 FORSC=1587038679:SC=INT(POKE36879,(SC/2)+158):POKE36865,SC:NEXT SC:POKE36878,255:POKE36879,255
5 FORP=110488:NEXT
6 PRINT "L"
7 FORBY=10488:NEXT:POKE36874,B
8 FORBY=10488:NEXT:POKE36874,B
9 PRINT "L"
10 FORBY=10488:NEXT:POKE36874,B
11 PRINT "L"
12 FORBY=10488:NEXT:POKE36874,B
13 PRINT "L"
14 FORBY=10488:NEXT:POKE36874,B
15 PRINT "L"
16 FORBY=10488:NEXT:POKE36874,B
17 PRINT "L"
18 FORBY=10488:NEXT:POKE36874,B
19 PRINT "L"
20 FORBY=10488:NEXT:POKE36874,B
21 PRINT "L"
22 FORBY=10488:NEXT:POKE36874,B
23 PRINT "L"
24 FORBY=10488:NEXT:POKE36874,B
25 PRINT "L"
26 FORBY=10488:NEXT:POKE36874,B
27 PRINT "L"
28 FORBY=10488:NEXT:POKE36874,B
29 PRINT "L"
30 FORBY=10488:NEXT:POKE36874,B
31 PRINT "L"
32 FORBY=10488:NEXT:POKE36874,B
33 PRINT "L"
34 FORBY=10488:NEXT:POKE36874,B
35 PRINT "L"
36 FORBY=10488:NEXT:POKE36874,B
37 PRINT "L"
38 FORBY=10488:NEXT:POKE36874,B
39 PRINT "L"
40 FORBY=10488:NEXT:POKE36874,B
41 PRINT "L"
42 FORBY=10488:NEXT:POKE36874,B
43 PRINT "L"
44 FORBY=10488:NEXT:POKE36874,B
45 PRINT "L"
46 FORBY=10488:NEXT:POKE36874,B
47 PRINT "L"
48 FORBY=10488:NEXT:POKE36874,B
49 PRINT "L"
50 FORBY=10488:NEXT:POKE36874,B
51 PRINT "L"
52 FORBY=10488:NEXT:POKE36874,B
53 PRINT "L"
54 FORBY=10488:NEXT:POKE36874,B
55 PRINT "L"
56 FORBY=10488:NEXT:POKE36874,B
57 PRINT "L"
58 FORBY=10488:NEXT:POKE36874,B
59 PRINT "L"
60 FORBY=10488:NEXT:POKE36874,B
61 PRINT "L"
62 FORBY=10488:NEXT:POKE36874,B
63 PRINT "L"
64 FORBY=10488:NEXT:POKE36874,B
65 PRINT "L"
66 FORBY=10488:NEXT:POKE36874,B
67 PRINT "L"
68 FORBY=10488:NEXT:POKE36874,B
69 PRINT "L"
70 FORBY=10488:NEXT:POKE36874,B
71 PRINT "L"
72 FORBY=10488:NEXT:POKE36874,B
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74 FORBY=10488:NEXT:POKE36874,B
75 PRINT "L"
76 FORBY=10488:NEXT:POKE36874,B
77 PRINT "L"
78 FORBY=10488:NEXT:POKE36874,B
79 PRINT "L"
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81 PRINT "L"
82 FORBY=10488:NEXT:POKE36874,B
83 PRINT "L"
84 FORBY=10488:NEXT:POKE36874,B
85 PRINT "L"
86 FORBY=10488:NEXT:POKE36874,B
87 PRINT "L"
88 FORBY=10488:NEXT:POKE36874,B
89 PRINT "L"
90 FORBY=10488:NEXT:POKE36874,B
91 PRINT "L"
92 FORBY=10488:NEXT:POKE36874,B
93 PRINT "L"
94 FORBY=10488:NEXT:POKE36874,B
95 PRINT "L"
96 FORBY=10488:NEXT:POKE36874,B
97 PRINT "L"
98 FORBY=10488:NEXT:POKE36874,B
99 PRINT "L"
100 FORBY=10488:NEXT:POKE36874,B
```

At the beginning of every game a flag appears to show how many you have managed. My personal best is 11 flags — best that.

When the game starts you are at the bottom left hand corner and the goblin is on the top right hand corner. To move around the maze are the following keys:

A left
B right
X down
W up

You cannot use a joystick because of the shortage of memory.

Notes on construction

Because of the current requirement to create the non-defined characters you would have to look up the correct code for your computer. You could replace them with standard characters.

All control and screen functions would have to be changed. These are the main functions I have used.

1074 volume setting
1075-1077 sound channel 1, 2 and 3
1078 colour of screen and border
1079 colour of screen and border

1080-1081 screen location
1082-1083 screen location
1084-1085 screen location
1086-1087 screen location
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1094-1095 screen location
1096-1097 screen location
1098-1099 screen location
1100-1101 screen location
1102-1103 screen location
1104-1105 screen location
1106-1107 screen location
1108-1109 screen location
1110-1111 screen location
1112-1113 screen location
1114-1115 screen location
1116-1117 screen location
1118-1119 screen location
1120-1121 screen location
1122-1123 screen location
1124-1125 screen location
1126-1127 screen location
1128-1129 screen location
1130-1131 screen location
1132-1133 screen location
1134-1135 screen location
1136-1137 screen location
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1174-1175 screen location
1176-1177 screen location
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1186-1187 screen location
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1194-1195 screen location
1196-1197 screen location
1198-1199 screen location
1200-1201 screen location
1202-1203 screen location
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1296-1297 screen location
1298-1299 screen location
1300-1301 screen location
1302-1303 screen location
1304-1305 screen location
1306-1307 screen location
1308-1309 screen location
1310-1311 screen location
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1364-1365 screen location
1366-1367 screen location
1368-1369 screen location
1370-1371 screen location
1372-1373 screen location
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VIC-30 PROGRAM

[illegible]



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Gower

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Setting a course for Victory

The newest games for the VIC-20 promise danger and excitement. How did our reviewers rate them? Read on...

Space Assault £5.95

Lynxsoft, 66 Lane St, Lymington

The game is in the Simultaneous genre, your task being to pilot a space ship down a curve scrolling right to left. Shooting alien craft and fuel dumps yield you points.

As the opposition does not fire back at you, the game is really an obstacle race like you also have to bear in mind that your space craft has limited fuel, forcing you to dock with mother ships in order to keep up your supply.

A neatly conceived game with nice graphics, but spins to two serious faults.

First, apart from the scrolling routine, the game is written in Basic, and all movement is slow and jerky as a result.

Secondly the programme has a number of bugs which result in portions of the display remaining and other odd things happening.

Sorry, Lynxsoft, has spared the huge amount of machine code opposition this game deserves its usual weak chance of success.

| | |
|-----------------|-----|
| instructions | 60% |
| playability | 40% |
| graphics | 75% |
| value for money | 40% |



Space Fortress £9.99

Bomb, 34 Church Street, Slough, SL1 1PT

One of the better Space Invader style games. According to the description, you are lost in space following a breakdown in your craft and have to destroy the Space Fortress.

This is defended by a strong armory including a Snakehead, Sawedown and Shotgun Scorpions. Finally you fight off the Purple Avengers before you can make an attack on the Fortress.

Destroying the Fortress gives an extra life but adds to the five granted at the beginning of the game. A maximum of nine lives can be accumulated, and with them a very large score.

The instructions are clear, and well set out in the program. For the keenest enthusiasts there are up to twenty skill levels and even a compression to enter to find a world champion.

Good use of sound and graphics. To make the best use of the fast action, use a joystick rather than the keyboard.

| | |
|-----------------|-----|
| instructions | 60% |
| playability | 65% |
| graphics | 70% |
| value for money | 60% |



Jumpin Jack £7.95

Smiletek, Royal London House, 188 Chancery, Manchester M3 9NE

An unfamiliar name, but the picture on the video card should leave you in no doubt. This is another version of Frogger. Five levels ending you may not like the picture, but frog lovers probably don't like the game.

The program, written in

assembly machine code, has the usual features and the graphics are excellent. The little cars that play continuously is very nice so your work, but I found it stupid to press when a while.

Control is from the keyboard or a joystick and both are easy to use. The keys (Z and C) for left and right and (S and A) for back and forward are placed within easy reach of each other and don't need to be learned for.

Each stage is harder than the last, with the appearance of faster cars and the disappearance of some of the larger logs. The video level also gives faster the further you go.

According to the video Jack is on his way home after spending the night with his lady friends, so if he gets run over, don't feel too sorry for him—I'm sure he'll be happy. If you've got a Vic and you're a fan of Frogger this just might be the game for you.

| | |
|-----------------|------|
| instructions | 100% |
| playability | 60% |
| graphics | 90% |
| value for money | 70% |



Space Attack £9.99

Bomb, 34 Church Street, Slough, SL1 1PT

Space is a hostile place, and the

space craft in this game are out to get you. They attack in a fast and furious pace even during the early stages of the game.

But as you defeat one more there are more to come, with deadly weapons that their predecessors.

To defeat yourself you have a laser and your own quick reactions to fight off the attackers. The keyboard may be used (A=left, D=right, S=down), or for better and faster results you have the option of joystick control.

The graphics are superb but unfortunately there were no weapons in all with my copy.

Still, as enjoyable game and worth persevering with even without instructions.

| | |
|-----------------|-----|
| instructions | 0% |
| playability | 75% |
| graphics | 85% |
| value for money | 60% |



P.A.U.L. (Personal Accounting Utilities Ledger) 48K £12.95

Argyll, 6 Westbank Drive,
Bishop's Cleeve, Shrewsbury

Double entry accounting has been the favourite book-keeping method for several centuries. All financial transactions are recorded in ledgers (two opposed sides) so that a debit in one ledger also appears as a credit in another.

For the newcomer to the technique, mistakes can easily be made. So Argyll have produced PAUL, for home-use owners wanting a professional system to deal with personal or small business accounts.

Once you have found a way through the accounting jargon, the extensive instruction manual provides useful information and promises a lot for PAUL — setting up ledgers, ensuring that entries are balanced, providing trial balances, etc. etc. But in use, the program proved to be disappointing.

One test of a program is to press keys at random, to see if the program can cope with garbage. PAUL didn't — it crashed out with a system error message.

Also on the negative side, screen formatting was poor, and the use of the screen display was primitive. Data entry is cumbersome, instead of creating one account and debiting another with a single entry, amounts have to be entered twice.

Despite these problems, the program did what was claimed of it, and, once the user becomes familiar with all its limitations and quirks, it could provide Spectrum owners with a useful accounting package.

The instruction manual starts — "Thank you for purchasing Argyll's PAUL" and the purchaser deserves to know that for paying with £12.95 for a product of such poor quality!

| | |
|-----------------|-----|
| instructions | 80% |
| ease of use | 40% |
| graphics | 30% |
| value for money | 30% |



Down to business with your Spectrum

**Your Spectrum may be good
for games, but that's not all it
can do. David Nowotnik casts a
critical eye over three
programs whose intentions are
serious**



Omnicalc 48K £9.95

Microphone, 12 Roseberry
Road, London N19 2LA

In reviewing Spectrum business software, the terminable question is, "Can Spectrum really be considered as a serious means, or just a plaything?"

A lot depends on the quality of software. As persons, much of it is mediocre. But if more programs shared the quality of Omnicalc, then we might well see more Spectrums in offices.

Omnicalc might be yet another spreadsheet program, but there is a professional feel about it which makes it stand apart from the rest. I've seen,

for instance, a well-provided 24 page manual.

The program has been well-designed. The entry of data/expressions/sets is straight-

forward, but if you get into problems, you can readily escape, and press h for help!

There are numerous error traps, and you are warned of an error by a few panned beeps. It is very difficult to go wrong.

Rapid entry of data and equations has been made very simple. Equations for obtaining totals and sub-totals of columns or rows are built-in.

Data can be saved on tape, and copied to a printer.

All Spectrum functions may be used in equations.

With Omnicalc, Microphone has not only set a high standard, matched by few, but has also kept the price reasonably low.

| | |
|-----------------|-----|
| instructions | 90% |
| ease of use | 90% |
| graphics | 90% |
| value for money | 90% |



Accounts 48K £25

Microphone, P.O. Box 15,
Logston, Bedford, Beds LU7
6DQ

Microphone produce two "Account" programs, one for a limited company, and one for a sole trader/partnership. Each costs £25, and the pair can be purchased for £35. The "limited company" version is the one featured in this review.

Considering the price of the program, the instructions are poor. They form the major part of the manual sheet, and are very limited in the information they provide.

Microphone must assume that all users will have some accounting experience; the non-accountant might find the program hard to use.

From prior studies in dividend transactions, the program will produce accounts sometimes quickly and less accurate, and a balance sheet with supporting schedules, and normal ledger listings, trial balances, post-closing ledgers, all in screen or ZX printer. There are 73 named account codes in-built, many of which can be altered if not suitable.

The program works well, but there are a few annoying features. All transactions must be entered twice, to credit one account and debit another.

There is an option to ensure that this is done correctly, and an imbalance in entry can give rise to tricky problems later on when the "trial balance" or "prepare accounts" options are selected.

Spectrum business software programs must lower their three appearances for the "serious" market. But then, in general, quality is also lower.

In this regard Accounts is no exception. It offers a complete package, but feels a little in quality.

| | |
|-----------------|------|
| instructions | 100% |
| ease of use | 60% |
| graphics | 70% |
| value for money | 30% |



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¹ The authors thank the referees for their helpful comments.

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lowest possible price, we've cut the cost of the printer, too. At £39.95, it's almost unbelievable.

At prices like these, there's
really no reason to wait.

[illegible]

Geoffrey Gooding, of Chameleon, had the dazed expression that a few months in the computer games business tends to give people. "It's like heroin," he admitted. "I just can't keep track of who I'm talking to."

Not that Chameleon is a stranger to the software field. It has been selling business software for the Apple for a year now, and spun off from its associated communications company. But the games, which were started in a new venture in January, are another story — or, as Geoff Gooding puts it, "more of a side."

They were looking around for new business ideas when the idea of selling computer games was suggested to them. At first, Geoff wasn't keen. "I immediately thought of the Atari and Intellivision games machines."

But then the idea of selling a rather different kind of machine took root. "We don't do it for what you might call the longer lasting game. There are more than enough people buying quick games — a would have been many of us to run with the hero."

Chameleon's approach was to set up their software business along the lines of a book publisher. They would deal with the marketing and make suggestions on how their "authors" programs could be improved.

In this, Geoff feels, his lack of computer experience is a positive advantage. He said: "Because I'm not experienced in the technical side, I've got no preconceptions about what can't be done. I can ask the sort of question that gets our programmers out of a rut."

They started out with 12 programs written by three different programmers, seven out of the 12 commissioned and completely rewritten by Chameleon. All of them were adventure games featuring striking graphics and strong storylines, often based on historical characters. But due to some careless programming they all ran on the IBM Spectrum.

"We stuck to the IBM because Simulas seemed then to be having some production problems with the 486C," says Gooding. "Besides, there are

Selling the longer lasting game

Chameleon has kept out of the mainstream of computer games with a range of adventures and war games that could go on for days. Geoff Gooding talked to Candice Goodwin about the company's strategy, and the problems it has encountered along the way



Geoff Gooding — threatened with Euler's theorem

an awful lot of IBM Spectrum about."

One of the original 12, Chameleon is now just advertising the three best-sellers: *Swordt*, *Beats of the Eagle* and *King Arthur*, a game which Gooding thinks is "unique". It is an adventure in 18 parts, dealing with the life of Arthur in his earlier Britain.

"It's got graphics, maps, dialogue — it's a real war game", Gooding says. "It's

surprisingly as sophisticated as possible."

During the game, the player has to fight nine battles, culminating in the Battle of Mount Badon, whose aim is to cause Britain under yet crown. Meanwhile you have to keep your army happy during the long marches from one battlefield to another, and contend with all sorts of unexpected factors.

"You may suddenly find

you can't move your army across the battlefield because the ground's too muddy, or because of the heaps of dead bodies. Or just before a battle you may find that two of your divisions have gone off pilaging."

Though *King Arthur* has been a success story for Chameleon, the company first acquired the rights to the game through a lot of bungle-errantry that Geoff has since had cause to regret. It came from a small software company called CPM, which was one of the founders of the computer software market — it opened and closed again in the space of about three weeks.

Along with the rights to the CPM games, Chameleon agreed to try and sort out one fatal CPM's overriding orders. But they found that CPM's records were no more of a model than they had bargained for: they found whole barrels of orders with no record of whether games had been sent out or not.

Most of the orders have now, Geoff says, been dealt with, "but the last few people are getting more and more snarled. We've been threatened with Euler's theorem."

"People assume that Chameleon used to be CPM and has changed its name, which is a pity — our business has been set up on the basis of good customer relations."

Along with many other software companies, Chameleon has also been dogged by problems in getting their tapes duplicated. "Duplicating problems have got us back by two months — we're still waiting for tapes that were due us and which it's lost us a lot of sales."

And delays haven't been the only problem, according to Geoff. "The master tapes for three games have gone missing — and the master is like our baby. If it goes missing, you don't know what that does to us!"

One customer rang in to say that the program he had ordered had turned out to be an audio cassette of fairy tales, and, Geoff claims, he has even found a completely new line in one tape sent out for duplication.

"I don't know what the public makes of a when things like that happen. It's highly embarrassing — you're literally

PROFILE

ingd as your chair when they ring in. I'm upset with the way that factors beyond our control have seriously affected the way we're trying to run the business."

Chambliss is hoping to get on developing problems behind soon, so that its "new generation" of games, due to be released in a couple of months, will be launched without a hitch.

The aim is to keep a range of 10 games for the ILS Spectrum, actually four magazines based on real situations, six adventure games, one based on a popular US TV series, and two children's games. Again the emphasis will be on good graphics, strong storylines, and varied features: the option to use the ZX printer to provide a permanent record of maps used in the games, and to stop and save games at any time. "After all, if you've got a 1,000-page game, you don't put it back in the box every night, do you?" says Goff.

There are also plans to produce a whole range of software

aimed at small children, to be sold as "pocket money packs" — probably under G4 Goff's wife Alexandra, currently at home looking after their 10-month-old baby, is working on some storylines for these, and suggestions are underway to use the Chambliss firm's well-known children's TV program as part of a game.

All the new programs will be priced around £5 — a fall in price from their current games, which sell at around £8. Goff adds: "Everyone's bringing their prices down now."

Goff, who originally went to art college, did the most designs for Chambliss's first batch of programs, but the new range will have full colour, professionally-produced artwork. "If there's one thing we're trying not to do, it's produce shoddy products," he says. "A graphic designer has now joined Chambliss's staff."

It now also has "four and half" programmers, most of them in their late 30s. Goff feels that "programmers and graphic designers are similar —

they just don't work normal hours."

"They don't want to be told it's going home time, so we have to be flexible, though it does upset planning sometimes."

They all work at home, and he feels that they all arrive in the office at the same time: it's lunch — we've noticed that every time that happens, it's a full moon".



A couple of Goff's latest designs for Chambliss programs

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